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Vol. CIV.



THE BEST HOUSE FOR ALL PHARMACEUTICAL PRODUCTS

Proprietors of the "Silver Churn" Dairy Preparations.

OLDFIELD, PATTINSON & Co.
TELEGRAMS: "OPIUM,"
PHONES: City 984 & 4038. **MANCHESTER**

Allenburys PASTILLES

The Criterion of Excellence

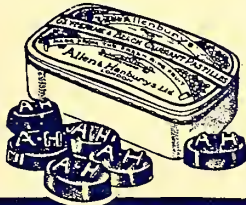
GLYCERINE & BLACK CURRANT

The intrinsic merits of these pastilles, together with effective and sustained national advertising, have created a very large demand that is rapidly increasing. We supply artistic and attractive show material for window, case and counter display. The 'Allenburys' Pastilles are easy sellers and often convert casual into regular customers.

On the
P. A. T. A.

Prices subject to
the usual speciality
discount.

Special terms for
direct orders.

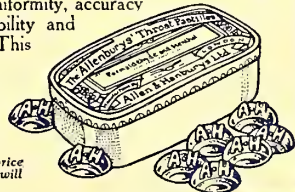


MEDICATED

A comprehensive series embodying a wide range of well-tried formulæ. These pastilles have long held the premier place in the esteem of the Medical Profession and of the discriminating public. They are elegant and effective, and distinguished by their uniformity, accuracy of dosage, correct solubility and good keeping qualities. This is the time to replenish stocks in readiness for the increasing demand.

On the P. A. T. A.

For full particulars see current price
list. Special descriptive booklet will
be sent on application.



ALLEN & HANBURY'S LTD, BETHNAL GREEN, E.2.

FOR 1926 SEASON TRADE

MORNY

FOUR MINIATURE PRODUCTS

DORÉ COFFRETS

(Gold canvas-embossed coverings).

Home Retail
Price

"June
Roses"

15/-

"Fantaisie"

15/6

Wholesale
and Export
33 $\frac{1}{3}$ off



Home Retail
Price

"Chaminade"

16/-

Essence
"Mystérieuse"

16/-

Wholesale
and Export
33 $\frac{1}{3}$ off

Containing—

BIJOU POLISHED CRYSTAL GOLD LETTERED BOTTLE PERFUME.
COMPLEXION POWDER IN GOLD COVERED CARTON.
COMPACT POWDER IN 2-INCH GILT CASE AND A REFILL.

An unusually attractive Coffret with an up-to-date selection of products.

Apply for Price List and full Export Terms to—

MORNY FRÈRES, LIMITED, 6 NEW BURLINGTON STREET, LONDON, W.1

The challenge of the tightened purse strings.

Lose heart and you will lose money too.

Wait complacently for times to improve and you will be left waiting.

Concentrate your thought, resources and energy on improving your selling forces and you will go forward.

Don't waste an inch of Counter, Fixture or Window space on anything that isn't creating sales.

"THE WIGGLESWORTH WAY"

policy is quite equal to the task of making "extra" sales when money is tightest.

Every Wigglesworth line brings its own repeats and every Wigglesworth card is a trained salesman.

Give them the light of day and space, plus the help of your own personality, and you will mark a happy difference in your takings.

When you have taken stock of your selling effort, write us if we can help you.

WIGGLESWORTH LIMITED

Packers of Pharmaceutical Specialities

WESTHOUGHTON

LANCS.

A A

"Berina"—the most profitable line

THE NEAREST FOOD TO HUMAN MILK

"Berina" is an absolutely new Baby Food, the latest outcome of research. The Proprietors make this statement with a full sense of responsibility. They are satisfied that they have succeeded in perfecting a food that is, without qualification, the nearest to human milk. It is in no extravagant spirit that they claim "Berina" to be the best paying line which enterprising chemists can handle.

The results obtained with "Berina" are incomparably good, this fact being testified to by eminent medical men and discerning mothers. It comprises all the natural essentials requisite and necessary to scientifically

proportioned and accurately balanced baby food in the parts of Full Cream Milk, Cream of Wheat, and Sugar of Milk. These are so arranged as to give the maximum nourishment to the robust, healthy child as well as to the weak and ailing.

Infants can be fed with "Berina" from birth, and this food does not cause or bring about any stomach or digestive troubles. As a matter of fact, children fed on it are quite free from digestive troubles.

It will be readily appreciated, therefore, that "Berina," possessing such outstanding advantages, commands a ready and persistent sale.



The Proprietors wish these Foods to be established on their merits and not through extravagant claims and press advertising.

The Proprietors will be glad to send free sample of the "Berina" Food to Chemists on receipt of postcard.

"BERINA"

BERINA FOOD-BERINA MALTED MILK

Prepared only by

MONTGOMERIE & CO., LTD.

IBROX, GLASGOW.

(Proprietors of "Bermaline" Bread.)

Secure this Attractive Display for Your Window



*Ensures Good
Steady Sales*

*Exceptionally Profitable
to Handle*

PHARMACISTS who have exhibited this collapsible "Theatre" showcard in their windows have been most agreeably surprised at the enormous increase it has produced in their sales of this popular line.

The showcard—specially designed for the purpose—is printed in highly attractive colours; the glass globes filled respectively with the crystal salts and tablets create the desired interest and give just that impetus necessary to effect sales. Place a trial order for one gross boxes—NOW. It is a line you can regard as your own speciality, and the ready manner in which it sells, coupled with the high margin of profit, are sure to please you.

A unique home treatment, exceptionally convenient, efficient and perfectly harmless. Customers readily express their appreciation of the marked benefit gained from this proved modern cure.



The showcard measures 33 ins wide by 14 ins. high and is supplied complete with the two glass globes free of charge for orders of not less than one gross boxes.

PRICE:

12/- per dozen boxes.
2/6 Retail (Protected).

WORKS AND
LABORATORIES:

KING'S LANGLEY,
HERTS.

A. WANDER Ltd., Manufacturing Chemists, 184, QUEEN'S GATE, LONDON, S.W.7.

TRADE MARKS

Trade Marks safeguard the manufacturer and also the consumer.

The user of a trade mark has confidence in his products and takes responsibility for them.

The Camel and Tortoise device appears on all "StaffAllenS" labels. It is the Sign of Good Quality.

"StaffAllenS" grind the following:—

EXT. BELLADON. VIRIDE
P.B. 1898

EXT. HYOSCYAMI
VIRIDE P.B. 1898

EXT. HYOSCYAMI
1st year

also

HYOSCYAMI FOL. BIENN
2nd year. P.B. 1914

HYOSCYAMI FOL. BIENN
2nd year. P.B. 1898

THE SIGN
OF
GOOD
QUALITY



Close to "The Factory in the Fields." English Belladonna on "StaffAllenS" farms at Long Melford, Suffolk.

Buy British Products

ENGLISH-GROWN MEDICINAL HERBS have always been renowned for their superior activity and freedom from sophistication. "StaffAllenS" ensure the continuation of this high standard by careful cultivation and the scientific handling of the crops.

From field to factory is but the work of a few hours, the harvested herbs being dealt with in the drying rooms and extraction houses long before they have time to wilt or deteriorate. Buyers will appreciate the importance of these facts when placing their orders and contracts.

"StaffAllenS" GREEN EXTRACTS

STAFFORD ALLEN & SONS LIMITED

Manufacturing Chemists

Drug Millers since 1833

Essential Oil Distillers

COWPER STREET, FINSBURY, LONDON, E.C.2

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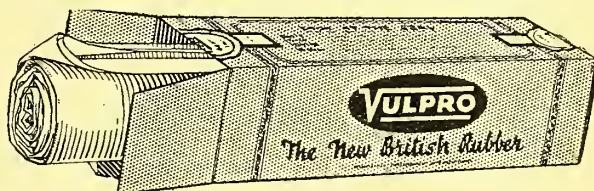
[Continued overleaf.]

Big Sales for these VULPRO SPONGE BAGS

Chemists who stock Vulpro sponge bags are delighted with the way they are selling.

The attractive orange coloured showcard boxes in which they are packed (2 dozen in three different sizes in each box) show them off to the very best advantage.

The sponge bags themselves are made from the new Vulpro rubber. They are beautifully finished in pretty colours. They are waterproof. They cannot crack or peel. They have no rubber smell. The two dozen sponge bags with their showcard box cost 27/-, leaving an ample margin for profit. Order to-day and watch your sales rise.



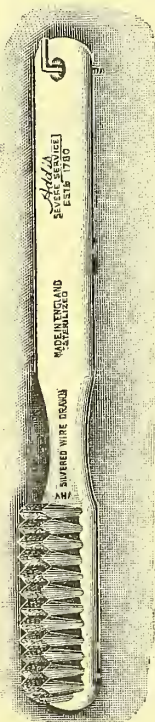
VULPRO Waterproof Sheetting

is a tremendous advance on old style waterproof sheetting. Vulpro is made by an entirely new process. It has no smell; it never cracks or peels; it can be sterilised again and again. Vulpro sheetting can even be sewn and machined like cloth. Doctors and nurses recommend it. Hospitals use it. It is sold in sealed orange coloured boxes containing 1-1½ and 2 yards. Retail prices for standard weight sheetting 5/- a yard (40-42" wide), 4/- a yard (36" wide). Trade prices: 3/9 a yard (40-42" wide), 3/- a yard (36" wide), giving 33½% profit.

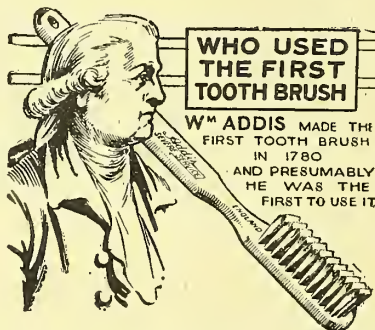
Write for particulars of all Vulpro lines. They sell well and show a good profit. Mention the name of your usual wholesale supplier.

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Made in Very Hard
Unbleached Bristle
for "Severe Service"

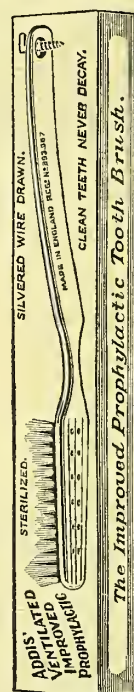


Every *Addis Prophylactic* and "SEVERE SERVICE" tooth brush box bears the following copyright wording:

Manufactured in England and guaranteed by the oldest firm of tooth brush manufacturers in the world.

When you offer your customer one of these he knows you are offering the best obtainable, not just selling for profit. At the same time ADDIS brushes give the regulation profit, a full guarantee and confidence to the customer to purchase other goods from you.

ADDIS BRUSH WORKS
HERTFORD, ENGLAND.



Made in
Very Hard } Bristles
Hard .. }
Medium.. }
or Soft if required.

Peak Profits - this Summer



on Semprolia Snow and Semprolia Cold Cream

PROFITS FOR YOU!

"Semprolia" Snow.

Opal jars in cartons - -	M.R.P.	Per doz.
(with striking display outer).	1/3	10/-

Sample aluminium boxes in
outers of 3 dozen 3d. 2/-

"Semprolia" Cold Cream.

Small opal jars in cartons -	1/-	8/-
Large " " " " -	1/6	12/-

(with striking display outer).

Collapsible tubes in cartons -	9d.	6/-
--------------------------------	-----	-----

Aluminium boxes (small) -	3d.	2/-
---------------------------	-----	-----

" " (large) -	1/-	8/-
---------------	-----	-----

Special concessions for Window displays.



THE demand for "Semprolia" Snow and "Semprolia" Cold Cream, backed by our intensive advertising campaign and other selling aids, is rapidly mounting, and all chemists who consider their business are quickly taking advantage of the benefit derived from increased sales.

"Semprolia" Snow and "Semprolia" Cold Cream differ entirely in essential characteristics from the ordinary run of these lines on the market at present. "Semprolia" Snow is a perfect and efficient vanishing cream. It is of satin texture, delightful cooling effect, exquisite fragrance and melts into the skin. "Semprolia" Cold Cream is of superfine quality and is the ideal night cream. These lines are most attractively packed for display.

Satisfy yourself by a glance at the prices and terms which are offered, and obtain your stock NOW of these excellent lines which can be thoroughly recommended to build up your prestige and increase your profits.

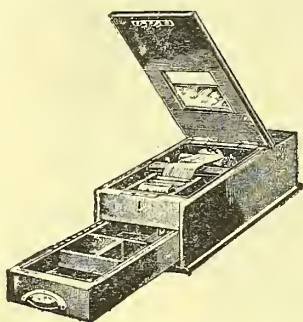
The dainty figure of the "Semprolia" Girl is helping to popularise all Semprolia preparations. Send for the beautiful Showcard in colours.

Anglo-American Oil Co., Ltd.

"Semprolia" Works
Albert St., Camden Town, N.W. 1

Telephones :
Hampstead 4046 and 4047.
Telegrams :
"Nufinjol, Norwest, London."

GOODS WELL DISPLAYED ARE HALF SOLD



No. C.D. 2608
Mahogany Colour Cash Till

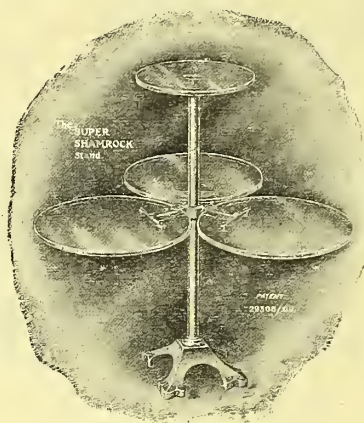
18" x 9" x 7½", lid fitted with lever lock and key. Recording paper 3½" wide. Sloping top, warning bell each time drawer is opened.

Price 28/6 each complete.



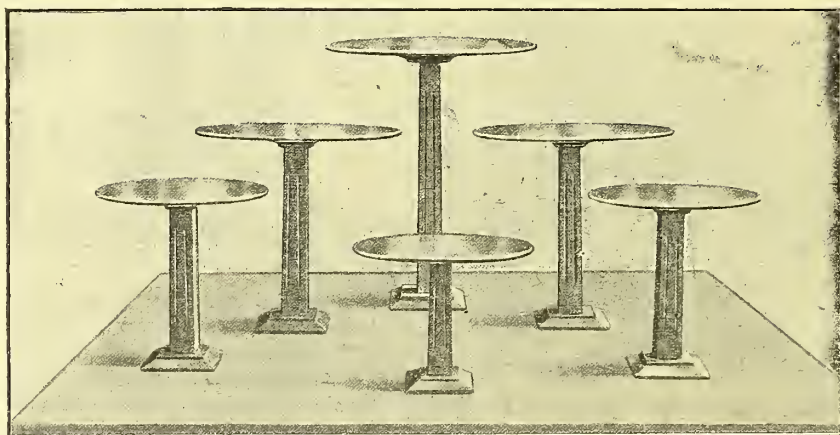
No. C.D. 705
Glass Pedestals

6"	8"	10"	12"
10/6	15/-	22/6	28/6
14"	16"	18"	20"
35/-	45/-	51/-	55/-
per dozen.			



No. C.D. 4005
"Super Shamrock" Stand No. 2
18" high with four 9" plate glass circles.
New design Base, Nickel plated.
Price complete 45/-. Telescoping to 24".

Plate
Glass
Shelves
of all
sizes
always
in
stock.



You are
cordially
invited
to
visit
our
Show
Rooms.

No. C.D. 2208

This very attractive and inexpensive set comprises:

1 9", 2 each 12" & 15", & 1 18" Solid Oak Fluted Pedestals; 3 12" x 9", 2 16" x 10" and 1 18" x 12" plate glass ovals polished all round, 34/- complete.

HASKINS

SAMUEL HASKINS & BROS. LTD.

SHOP FITTERS

Head Office & Works: WALTHAMSTOW, E.17

Display Fittings Department:

32/34 OLD STREET, LONDON, E.C.1

'Phone: Clerkenwell 3405/6

Manchester Branch: 1 NEW BROWN STREET

Write or call for
Illustrated
Catalogue C9 to
Display Fittings
Dept.
32/34 Old Street,
London, E.C.1
(close to Goswell Rd.)

Orders of £2 and
over Carriage Paid
in London area;
£10 and upwards
Carriage Paid to
any station in
Great Britain.



TRADE MARK.

"ZINYL"



TRADE MARK.

A DISINFECTANT, non-caustic, perfectly soluble with water and forming a milky opalescent mixture, which remains without separation. Carbolic Acid, on the contrary, sinks to the bottom and thus exerts but a limited effect. "Zinyl" contains 18/20% of Tar Acids. Much of the "cheap" rubbish sold does not contain 3%, and is practically worthless.

A powerful Germicide and Deodoriser

For use in Drains, Lavatories, Sinks, etc., for the Stable and Kennel, and for washing Horses and Dogs.

3/3 per gallon ; 100 gallons, 3/- ; 250 gallons, 2/10½ per gallon.

40-gallon casks free, and 5-gallon and 10-gallon drums extra.

Also attractively put up in pint bottles, 10/- per doz. ; 2-pint bottles, 14/- doz. ; and one gallon tins, 42/- doz.

Zinc Oxide ("Puriss")

The whitest and lightest made, testing upwards of **99·8% ZnO**, a degree of purity not usually associated with a product made on a commercial scale. It has been known and appreciated by the Drug trade in all parts of the world for nearly half a century.

We also offer limited quantities of **Zinc Oxide ("Puriss Extra")**. **99·96%**. Free from iron, etc., which is practically chemically pure.

H. E. STEVENSON & CO. Wholesale Druggists and
Manufacturing Chemists,
122 GREAT SUFFOLK STREET———LONDON, S.E.1.



Measures
30" wide × 15" deep
with 9½" base.

Printed in Full
Colour—very in-
geniously "cut out"
—easy to erect.

USE THIS WONDERFUL
DISPLAY TO HELP YOU WIN £100 IN THE
WINDOW DISPLAY SECTION OF THE GREAT
DRUMMER PRIZE SCHEME.

Here is a cut-out display worthy of a place in your window. It presents, in a very attractive form, the magnificent prizes offered in the Drummer £2,000 Gift Scheme. It is a fine piece of advertising matter that will draw people from across the road into your shop to buy Drummer Dyes and other things.

There are prizes totalling £290 to be won for the best window displays featuring the Drummer £2,000 Prize Scheme, in addition to awards to retailers whose customers win prizes. This handsome 30" × 15" full-colour display will be sent free together with the small cut-out showcard illustrated below. Write for them and full particulars of the Window Dressing Competition to

EDGE'S - - BOLTON.



DRUMMER
£2,000 PRIZE
SCHEME

Maw's



Page

Maw's Infants' Feeding Bottles

Every pharmacist knows just how important it is that the feeding bottles he sells are fashioned on scientific lines, made from reliable materials and properly finished.

He knows that he has to meet the demands of mothers in many stations of life, and that he must stock bottles which he can sell at a range of prices varying from low to moderately high.

It is obvious, therefore, that the only possible source of supply is a house of long and wide experience with an undeniable reputation. The House of Maw has both the experience and the reputation. For many years it has supplied pharmacy with feeding bottles of thoroughly reliable quality, conforming to the ruling scientific theories.

The three lines quoted are well-known to many pharmacists and enjoy big sales. The cheapest of the three is a highly competitive line with a strong appeal to pharmacists located in areas where spending power is limited.

4/3005. Maw's "Eugenic" (regd. No. 527885). White with reversible transparent india-rubber teat and valve. Each in box with brush.

Price, complete, per dozen ..	12/-	Spare teats, per dozen ..	2/9
Spare bottles	5/-	Spare valves	2/3

4/3006. Maw's "Health." White with black or transparent reversible india-rubber teat and valve. Each in box with brush.

Price, complete, per dozen ..	9/-	Spare teats, "L.P." per dozen	2/6
Spare bottles	4/6	Spare valves	1/3

4/3008A. Maw's "Hygienic" No. 2. White with good hygienic teat and cap valve. Each in carton with brush.

Price, complete, per dozen ..	6/9	In bag with teat and valve	
		per dozen	4/6
Without brush	6/3	Spare bottles	3/-

"Maw's Welfare" anti-colic teat is the most popular teat on the market at the present time. It can be used with all three bottles quoted, and should be strongly recommended to every feeding-bottle purchaser.

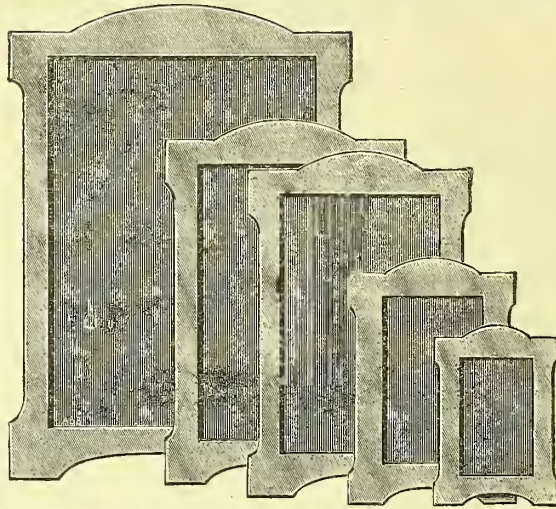
S. Maw, Son & Sons, Ltd.,
Aldersgate St., London,
and Barnet.



PHOTO FRAMES

EXCLUSIVE
DESIGNS
IN H.M.
SILVER,
E.P.N.S.,
Etc.

SEND P.C.
FOR LATEST
ILLUSTRATED
LIST.



Large variety
of H.M.
SILVER and
E.P.N.S.
TOILET
SETS,
SCENT
BOTTLES,
SCENT
SPRAYS,
ALWAYS
IN STOCK.

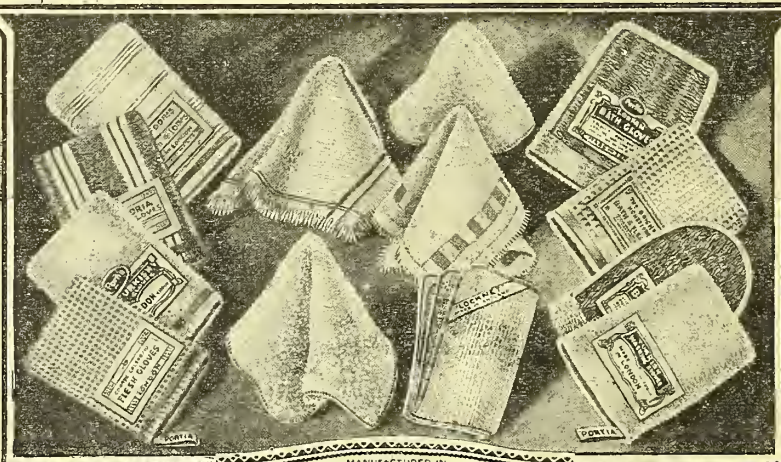
ADOLPH SCOTT LTD.

23, 24, 25, 26 GREAT HAMPTON STREET - BIRMINGHAM.

Portia
Regd.

Bath Gloves & Washing Squares

in every reliable fabric



MANUFACTURED IN
HYGIENIC FACTORIES BY
SOLPORT BROTHERS LTD
184-190, GOSWELL ROAD,
LONDON, E.C.1



WRITE FOR LATEST REVISED PRICES.



Attractively designed in Red and Gold, the Halex Case is convenient for quick serving and allows a satisfactory choice for your customers. Keep it handy on your counter.

Replenish your Stock of Halex Tooth Brushes—now !

ANOTHER big Halex advertising campaign has commenced. It is planned (as past Halex publicity has been planned) to reach not only regular tooth-brush users, but also the thousands who still don't use tooth brushes often enough.

It will emphasise the health-value of proper teeth-cleaning along with the money-value of Halex brushes. In this way Halex advertising will continue to increase the sales not only of Halex brushes in particular, but also tooth brushes in general.

Take this opportunity of replenishing your stocks of Halex tooth brushes. If you need a new display case just mention it in ordering.

Send for this Special Introductory Parcel

This famous introductory parcel is offered at a special price that brings us no immediate profit. But it pays us afterwards because, once the display material has got to work on a chemist's counter a repeat order always follows.

THE PARCEL CONTAINS

- (a) A handsome glass-fronted display case containing 12 Halex brushes (2 of each pattern).
- (b) Three dozen Halex brushes in six handy boxes—making four dozen brushes in all.
- (c) Two striking transparencies and a show-card for window display.

Introductory parcel (order from your usual wholesaler) **40/-**

Halex BRITISH MADE Tooth Brushes

THE BRITISH XYLONITE COMPANY LIMITED, HALE END, LONDON, E.4

BOTTLES & GLASSWARE

OF EVERY DESCRIPTION
FOR THE TRADE
WHOLESALE ONLY

In all Colours

We make good

BOTTLES

—hand or machine made.

Large and well-organised
works enable us to meet your
immediate requirements for

**DISPENSING, EMULSION,
COUGH MIXTURE,
SAUCE, EMBROCATION,
FEEDING BOTTLES, &c.**

*Our prices are right
—and our Bottles are
British manufacture.*

Make us your standard Bottle suppliers
—we can meet your every need.

LAX & SHAW

LIMITED.

Albert Glass Works.
Hunslet, Leeds.

BELINDA GLASS WORKS, HUNSLET.
CLARENCE GLASS WORKS, HUNSLET.

TEL. ADD: FEEDERS, LEEDS. TEL. NOS: 27047 LEEDS
23080

Don't use COMMON BOTTLES

*There is nobody so fastidious
as an Invalid. Cater to his
fastidiousness by turning out
your prescriptions in the best
possible style.*

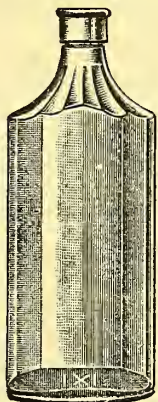
*There is no better help than
a smoothly finished, bright,
attractive bottle.*

Buy BEATSON'S BOTTLES

ESTABLISHED 1751.

Beatson, Clark & Co., Ltd.
ROTHERHAM GLASS WORKS,
ROTHERHAM.

No shortage of "AYRTON OVALS"



Prices for original crates:—

Size	Per gross	Quantity in crate.
1 oz.	14/3	10 gross
2 "	16/-	6 "
3 "	18/6	6 "
4 "	20/6	6 "
6 "	22/-	3 "
8 "	24/-	3 "
10 "	28/6	3 "
12 "	32/6	2½ "
16 "	36/-	1½ "
20 "	40/-	1½ "

PACKING AND CRATES
FREE—Carriage paid to any
Railway Station in Britain or
free on board ship for Ireland.

For smaller or assorted
lots write for quotation.

"Complete Test" assorted crate
for £2 18s. 8d. carriage paid.

THERE IS SOMETHING MORE about a bottle than just glass. A subtle psychology with which genii have been associated always.

THE "AYRTON OVAL" is so distinctive that it has qualities outside its material value. It produces an atmosphere which suggests quality and refinement, and exerts a sales-influence which is insistent and compelling.

THE "AYRTON OVAL" has such neatness of appearance and utility of purpose that it must find a place in the High Class Pharmacy. The cork fits, and seals the bottle—the same cork will fit every bottle of the batch. The pour-out is perfect, the base firm as a rock, and the white flint glass is clear as crystal.

MADE ON THE OWEN'S AUTOMATIC MACHINE, every "Ayrton Oval" is a twin of the other—equal in capacity, weight and specification, with additional strength due to equal glass distribution and controlled annealing.

WRITE US

ON THE GLASS BOTTLE QUESTION

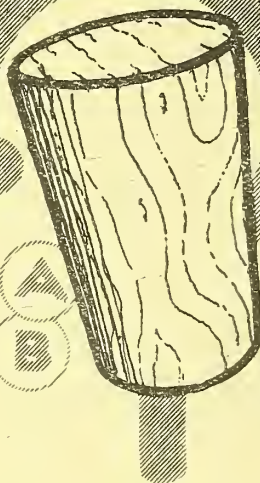
—We are in a unique position to quote for—
MEDICAL FLATS—PANELS—LIMES—KALIS
VIALS—POISONS AND TABLET BOTTLES

Special Quotations for Export.

A Good Turnout means a Good Turnover.

AYRTON, SAUNDERS & CO., LTD.

Manufacturing Chemists ... 34, Hanover Street, LIVERPOOL, Eng.
Telegrams: "SUNDRIES, LIVERPOOL." Telephone: ROYAL. 4861.



BEHIND *this* CORK

THERE is, behind this Cork—and all Armstrong Corks—a proud reputation built up by 65 years of honest trading.

Armstrong Corks are guaranteed corks. They are always up to sample—always up to standard. You *know* what you are going to get when you re-order. They are graded (A), (B), and XXX, XX and X. There is a grade and a price for every need. Buy the Corks which are backed by a reputation and a guarantee.

— Write TO-DAY for —
Samples and Quotations.

**ARMSTRONG
CORK CO. LTD.**

306 Sardinia House
KINGSWAY
LONDON
W.C.2

SOUND-CLEAN-UNIFORM

CORKS

SEND FOR SAMPLES.

ESTABLISHED 1844

**C. Olley & Sons,
LIMITED.**

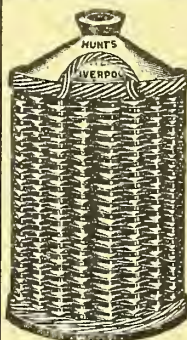
Camperdown St., & Great Alie St.,
London, E.1.

Phone: Royal 2868. Wires: "Circumference, Ald, London."
WHOLESALE & EXPORT.

METALLIC CAPSULES

for all kinds of Bottles & Jars.

The Tonkin Metallic Capsule Co.
(PROPRIETORS: C. OLLEY & SONS, LTD.)



PLAIN and WICKERED
STONE

BOTTLES & JARS

FOR SPIRITS, ESSENCES,
CHEMICALS, ETC.

HUNT'S Limited

Stoneware Manufacturers,

Tel.: 426 Royal.

33 Henry Street, LIVERPOOL

VISKAP

BOTTLE
(APS)

The
ORIGINAL-BEST
and
ONLY BRITISH MADE.

SELF-FIXING, HERMETIC,
TRANSPARENT, OPAQUE, COLOURED.
IMMEDIATE DELIVERY
FROM THE MANUFACTURERS.

VISCOSE DEV.CO LTD. BROMLEY KENT.

RELIEVES
COLDS

PREVENTS
"FLU"



A New Advertising Campaign

MORE than forty journals and magazines of national circulation are now being used to increase the demand for "Vapex" Inhalant amongst the better-class public.

Contracts have been placed with these papers for frequent insertions from June to the end of the year:

"VAPEX" and the PHARMACIST

"Vapex" meets every requirement which the Pharmacist rightly demands from a preparation in which he is asked to take an interest.

It is profitable — every sale brings a minimum protected profit of 6d., 9d. or 3/- according to size.

It is nationally advertised and each advertisement directs readers to the Chemist for supplies. It is in growing demand because hundreds of satisfied users are continually recommending it to their friends. It is now well-established in the public confidence.

THOMAS KERFOOT & CO. LTD.
BARDSLEY VALE, LANCASHIRE,
& Bardsley House, London, N.1.
ESTABLISHED 1797.

B/402

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CHEMICAL WORKS "FLORA"

DUBENDORF, ZURICH - SWITZERLAND.

Manufacturers of

ARTIFICIAL MUSKS

100%

AMBRETTE

KETONE XYLOL

The "Flora" Musks are the essence of perfection, and striking examples of a factory with a large reputation for quality.

LONDON STOCKS

Samples and Prices from—

CHAS. ZIMMERMANN & CO. (Chemicals), LTD.

33 St. Mary-at-Hill, London, E.C.3

THE STANDARD

D & O
BRAND

OF QUALITY

AMERICAN ESSENTIAL OILS

GENUINE AMERICAN PEPPERMINT OIL

*Natural : finest single distilled. Prismentha : re-distilled.
Supermentha : rectified.*

OILS OF NUTMEG, COPAIBA, SASSAFRAS,
CEDARWOOD, SPEARMINT, WORMSEED.
BALSAM : PERU, COPAIBA, TOLU.

Dodge & Olcott Co.

20 Mark Lane, London, E.C.3.

'Phone: Royal 3102/3. Wires: "Egdarf, Fen, London."

Head Office: 87 Fulton St., New York.

Telegrams: Raab, Roermond.

Aromatic Chemicals Synthetic Perfumes

Flower Oils Essential Oils

CHEMICAL WORKS, ROERMOND

H. RAAB & CO., ROERMOND, HOLLAND.

Agent for the U.K.:

MR. ALFRED PAUL WHITE, 5 Water Lane, Gt. Tower St., London, E.C.3

Telegrams: Whaitop, Bilgate, London.

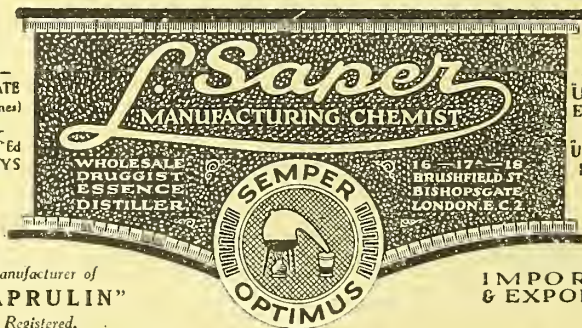
Ask us to quote you before
buying:

ESSENTIAL OILS,
ESSENCES,
FINE AND HEAVY
CHEMICALS

In Bulk and Packed Lines.
Samples sent on application.

Phone:—
BISHOPSGATE
1832 (2 Lines)

Codes:—
A.B.C. 516 Ed
& BENTLEYS
7



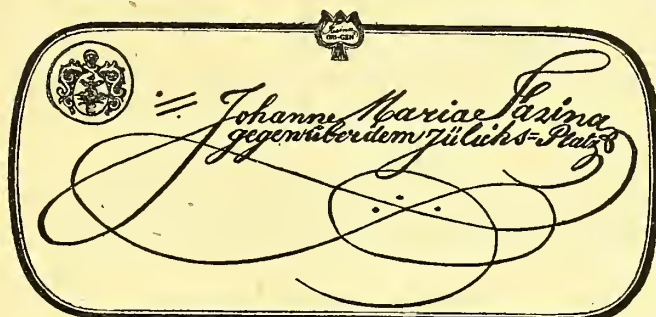
Manufacturer of
"SAPRULIN"
Registered.

Telegrams
UNADVISED
EDO. LONDON
Foreign:
UNADVISED
LONDON
7

IMPORT
& EXPORT

Original & Genuine EAU de COLOGNE

ESTABLISHED 1709.



NEW INCREASED DISCOUNTS FOR RETAILERS ON ANY QUANTITY

EXTENSIVELY ADVERTISED IN
NATIONAL, DAILY AND WEEKLY
PAPERS, ALSO LEADING
PROVINCIAL PAPERS.

Used by Every Royal Court in
Europe and all classes for over 200
years. This famous brand is rapidly
regaining the foremost position as the
most popular Eau-de-Cologne. During
1926 the advertising appropriation is
being considerably increased with
a view to restoring the Original &
Genuine Eau-de-Cologne to the pre-
eminent position it once held.

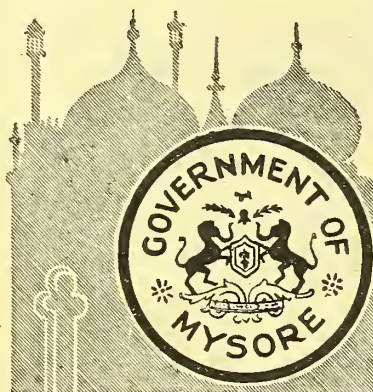
Write for a full range of showcards,
advertising literature, etc., to

Blackaller & Pleasance

15 ST. GEORGE'S ROAD
LONDON, S.E.1

Telephone: 5370 Hop.





*Mysore Government Seal
is your guarantee that
the Oil is the finest in
the World*

EAST INDIAN SANDALWOOD OIL

Sole European Distributors:

ESSENFLOUR PRODUCTS LTD.

"Perfume House" 6, 7 & 8 BEAUCHAMP STREET, LONDON, E.C.1

Telephone: HOLBORN 2499, 6214, 6215 (3 lines).

Telegrams: "EKDUM, LONDON."

ESTABLISHED 1768.

ANTOINE CHIRIS
GRASSE

ESSENTIAL OILS
FLORAL WATERS
GUM BENZOIN
OLIVE OIL

ANTOINE CHIRIS LTD.

3 DRAPERS GARDENS,
THROGMORTON AVENUE, E.C.2.

Telephone - - - - - London Wall 7419

ANILINE DYES
PHOTOGRAPHIC
CHEMICALS
LIQUORICE (BLOCK and STICKS)
GENERAL CHEMICALS

We Specialise in Highest Quality.

Distributors in England for

FRIES BROS.' renowned ESSENCES
(PEACH, APRICOT, Etc.)

Also for the HIGH CLASS

Melba Toilet Preparations

A. CONNELL & CO., Melba House,
WENLOCK ROAD, CITY ROAD, LONDON, N.1
Phone: Clerkenwell 7265. Tele.: "Nitrozone, Nordo, London."

POLAK & SCHWARZ, LTD.

Manufacturers and Distillers of
ESSENCES, ESSENTIAL AND FLORAL OILS, AND
AROMATIC CHEMICALS

(Works : ZAANDAM & HILVERSUM, HOLLAND),

Beg to advise their numerous friends and the Trade generally that the agency held by Mr. K. B. MAVLANKAR, London, E.C., has been discontinued, and that in future the sale of their products in the U.K. will be organised and carried out through a company formed by them under the name of

POLAK & SCHWARZ (ENGLAND) LTD.
8 Edmund Place, Aldersgate Street, London, E.C.1

Telephone : CENTRAL 3387.

Telegrams : "POLSCHWARZ, CENT., LONDON."

to which address all orders and enquiries should be sent. Ample stocks will be carried in London, and prompt and careful attention to your requirements will be maintained as in the past.

MAGNUS, MABEE & REYNARD INC.

AMERICAN ESSENTIAL OILS

BAY
 CEDARLEAF
 CEDARWOOD
 PEPPERMINT
 PETITGRAIN
 SPRUCE
 TANSY
 ERIGERON
 SPEARMINT

BALSAMS

ADDRESS :
MAIN SALES OFFICES
32 CLIFF STREET, NEW YORK, U.S.A.



Allwood Bros

CARNATION PERFUME

Pot Pourri
 Compressed Blooms
 Silk Sachets
 Toilet Soap
 Bath Crystals

DO YOU STOCK THEM ?

If not, read the offer given below.

We grow the Carnations, endless thousands of them, from which the perfume is distilled.

Allwood Bros

THE LEADING CARNATION RAISERS & SPECIALISTS
HAYWARDS HEATH

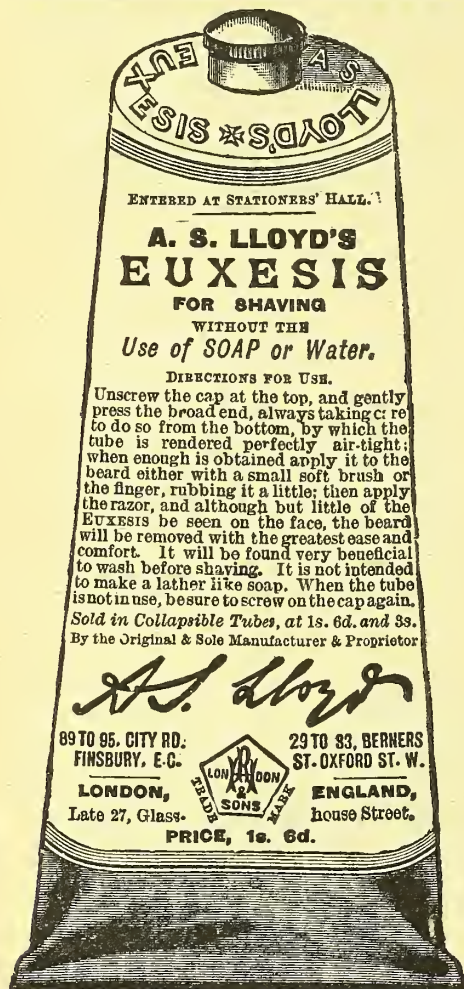
SPECIAL OFFER

We will send carriage paid for £1 a mixed consignment on best terms showing over 60% profit on cost. Beautiful and attractive show screens supplied free. Send a trial order to-day.

A. S. LLOYD'S EUXESIS

(THE GENUINE).

For Shaving without Soap, Water, or Brush.



**Sold by all Perfumers and Chemists
throughout the World.**

R. HOVENDEN & SONS having purchased, under an administration suit, the Business of the late A. S. LLOYD, with the Receipt, Trade-Mark, and Goodwill of the celebrated Euxesis, the Trade are cautioned that the original and genuine Euxesis is now manufactured at our Factory ONLY and may be obtained at either of our Warehouses.

PRICES ON APPLICATION.

NOTICE.—THE GENUINE A. S. LLOYD'S EUXESIS bears a label printed in BLACK only on a Yellow ground, with our Trade Mark at the bottom, as illustration.

Proprietors: **R. HOVENDEN & SONS, LTD.**

LONDON: 29-33 Berners Street, W.1; and 89-95 City Road, E.C.

TRADE MARK



A Face Powder which shows a rapidly increasing demand without the stimulus of a public advertising campaign must possess intrinsic merits which speak for themselves.

POUDRE YVONNE

(pronounced EE-VON) (Regd.).

is a high-grade face powder retailing at a moderate price and is enthusiastically recommended by most of the leading members of the theatrical profession:—

SYBIL THORNDIKE, L.L.D.
LILIAN BRAITHWAITE.
MARGARET BANNERMAN.
MARY GLYNNE.
KYRLE BELLEW.
HILDA BAYLEY.
FAY COMPTON.
MADGE TITHERADGE.
PEGGY O'NEIL.
BETTY CHESTER.
YVONNE ARNAUD.
LYDIA LOPOKOVA, Etc. Etc.

Handsome show-cards bearing five photographic reproductions from above list sent with orders of £2.

Retail 1/6 and 2/3 per box.

Sample Size 7½d.

OUR SPECIAL BONUS TERMS
SHOW A PROFIT OF 40% AND
OVER ON THE SELLING PRICE

SPURWAY ET CIE, LTD.

89 Great Eastern Street,
LONDON :: :: E.C.2.

CANNES-GRASSE, RIVIERA.
PARIS.

LEIPSIC NEW YORK
KINGSTON (ONTARIO)

Telegrams - "NEROLI, LONDON."
Telephone - BISHOPSGATE 1372.

A. S. LLOYD'S EUXESIS.

For Shaving without Soap, Water, or Brush.

CAUTION.

The Labels on GENUINE EUXESIS bear two signatures—
A. S. Lloyd in Black Ink, and that of his Widow,
Aimée Lloyd, in RED. Refuse any other.

Sole Manufacturers and
Proprietors:

AIMEE LLOYD & CO.

23 PANTON STREET (formerly named Spur Street),
HAYMARKET, LONDON, S.W.

N.B.—When ordering from Wholesale Houses write LLOYD'S EUXESIS (WIDOW'S).

Peldo
(Patent applied for)

THE
INVISIBLE
GLOVE

IF YOU SHOW 'PELDO' YOU WILL SELL IT!

'PELDO' IS ORIGINAL.

It is not a Substitution for Anything.

Obtainable from all the Patent Houses @ **13/6** per dozen.

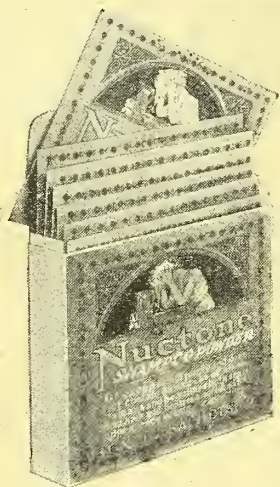
WINDOW DISPLAY MATERIAL FREE ON APPLICATION.

SOLE PROPRIETORS AND MANUFACTURERS:

C. R. HARKER, STAGG & MORGAN, LTD.

Devon Wharf and Bell Wharf,

EMMOTT STREET, MILE END, LONDON, E.1.



The Nuctone Shampoo pack which is beautifully printed in colours.

Grades: Nuctone, Nuctone Henna, Nuctone Pine, Nuctone Camomile.

Bigger Shampoo Profits

There are years of experience in high-class hairdressing behind the Nuctone Shampoo. It has been in use for many years in a famous Bond Street Salon, and wherever it is introduced repeat Sales follow with certainty—yet it shows you a quite exceptional profit. A special window display bonus of one box with every dozen ordered will be given with all orders received during June. Nuctone Shampoos help to sell Nuctone for grey hair and vice versa. Take this opportunity of putting in a real money-making line.

Nuctone

SHAMPOO POWDER

TERMS: Nuctone Shampoo (3d. retail) 1/8/- per doz. (P.A.T.A.) Box of 7 (1/6 retail) 12/- per doz. boxes. Nuctone Henna, Pine and Camomile (4d. retail), 2/- per doz. Box of 7 (1/9 retail) .. 14/- per doz. boxes.

Display Bonus of 1 box to every dozen boxes.

NUCTONE FOR GREY HAIR. IN FOUR GRADES:

NUCTONE for dark and medium hair.
NUCTONE ECLAIRE for fair and auburn hair.
3/9 size .. 32/- doz. 6/6 size .. 52/- doz.
NUCTONE CONCENTRE for quicker results for dark hair.
NUCTONE ECLAIRE CONCENTRE for quicker results for fair hair.
6/6 size .. 52/- doz. 12/6 size .. 84/- per doz.

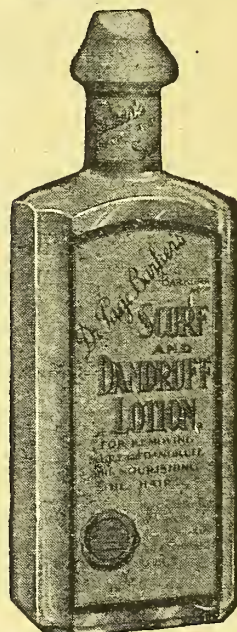
Obtainable from your usual wholesalers or direct from—

J. D. GAMBLE & Co., Ltd.
211/215 Blackfriars Road
LONDON S.E.1

Manufactured by—
STEWART, GOODALL & DUNLOP, LTD.
4 Dering Street London, W.1

Dr. Page-Barker's Scurf Lotion

THE specific recognised throughout the Trade as the one genuine and reliable remover of Scurf and Dandruff. Every bottle carries a guarantee. 18/- per dozen, retail at 2/6. With an order of three dozen you get a free bonus of three 2/6 bottles, also an attractive showstand. Smart show matter. Leaflets with your own name.



THOS. CHRISTY & CO.

4, Old Swan Lane,
Upper Thames St.,
E.C.4.



SHADEINE

For COLOURING GREY HAIR

This popular article is largely advertised and stocked by all Wholesale Houses.
Trial size 8d. per doz. .. 8/-
1/4 size, per doz. .. 12/-
2/6 size, per doz. .. 24/-
3/6 size, per doz. .. 38/-

The SHADEINE CO., 58 Westbourne Grove, London, W.2.



Those First Grey Hairs appear just

here

Touch them up with
TATCHO-TONE

Trial Phil¹
8^D

Medical Guaranty with bottle. Chemists Prices 2/6 & 4/6 or direct to the Tatcho-Tone Co., 5, Gt. Queen St., W.C.2

Dorin of PARIS
Aids to Beauty

ADVERTISES EXTENSIVELY

in Daily and Weekly papers, in Magazines, by Posters in the London Tubes, by Showcards, and by Artistic Folders, their well-known preparations

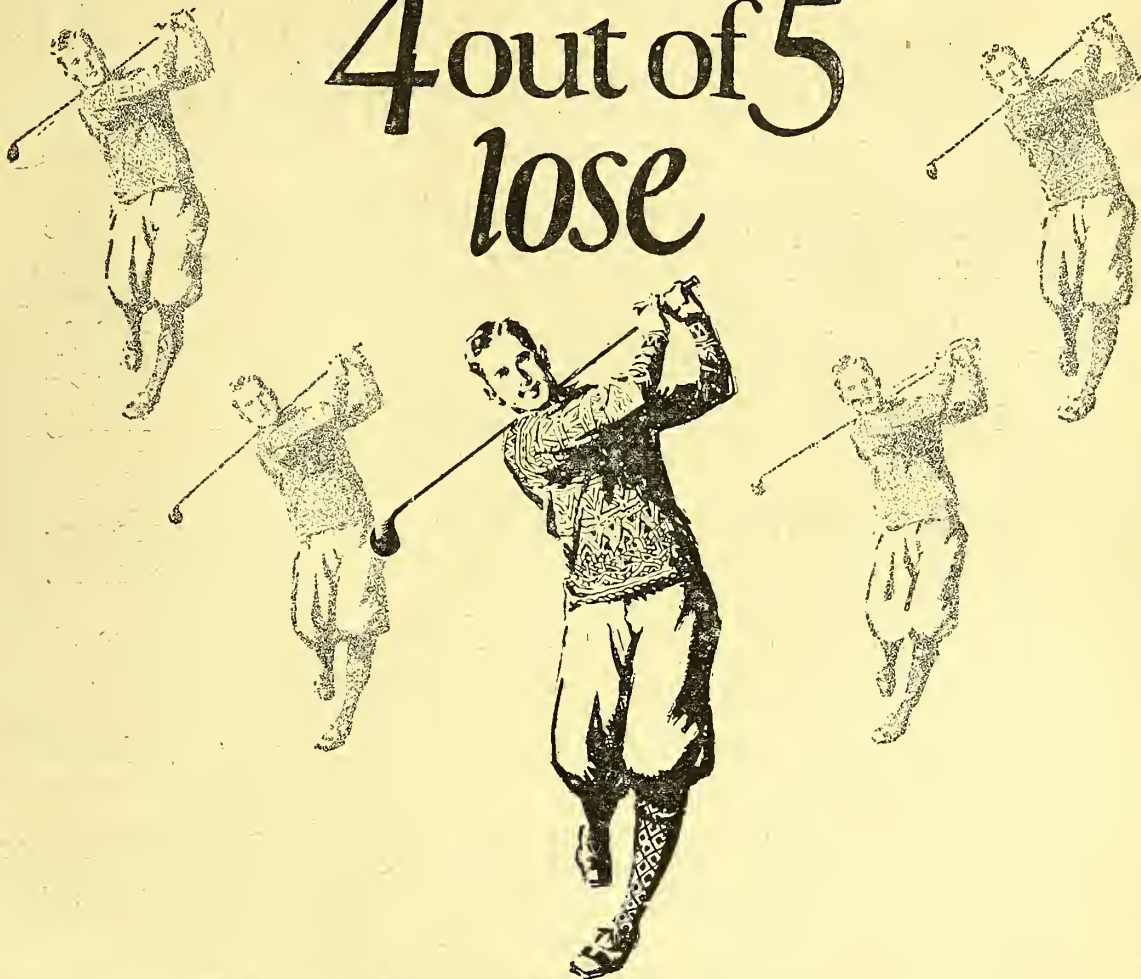
ROUGE BRUNETTE
DORINA POWDER
NIRODA POWDER

UN AIR DE PARIS
CREME ECLALYS
NACRADORINE

ORDER YOUR STOCK

FROM
DORIN LTD., 41 Charterhouse Square, LONDON, E.C.1

4 out of 5 lose



You Win Every Time!

EVERY time that Pyorrhœa strikes, some pharmacist can gain another customer!

For Forhan's For the Gums, alone of all dentifrices, definitely helps the dentist to check or prevent this dread disease.

What are you doing about it? Is there a beautiful Forhan's For the Gums showcard standing invitingly in your window—signpost to healthy teeth and gums *via* your till?

Remember the ever-growing Pyorrhœa casualty list; 4 out of 5 over forty, and thousands younger. Can you afford to miss such an opportunity?

The showcards are free on request.

Forhan's

FOR THE GUMS

More than a tooth paste—it checks Pyorrhœa.



THOS. CHRISTY & CO.
4-12 Old Swan Lane, London, E.C.4

ARMAND

The more ARMAND Toilet Preparations a lady uses the better she is pleased with herself—and ARMAND.

ARMAND quality never fails to appeal. You can satisfy your customers with all or any of the ARMAND series—and satisfy yourself, for ARMAND profit is a fitting reward for your interest in ARMAND sales.

We would like to send samples for your wife or lady members of your staff if they have not yet tested ARMAND.

Send Post Card to-day for Price List and further particulars.

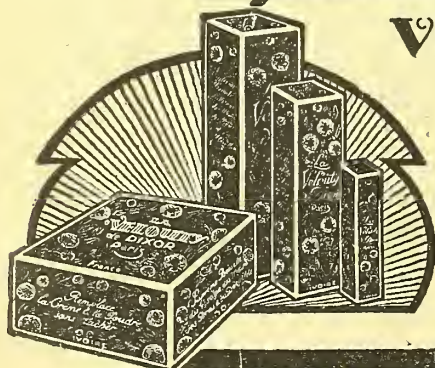
Florian & Armand, Ltd., Queensway, Ponders End, Middx.

ANYTHING IN THE SUNDRIES LINE RENE HEYMANS LTD.

including ENEMAS, WHIRLING SPRAYS, SOOTHER FITTINGS, DOUCHE FITTINGS, POWDER and VANITY PUFFS, BRUSHES, COMBS, POWDER PUFF
:: :: :: MANUFACTURING ACCESSORIES, Etc., Etc. :: :: ::

Our Paris House is always on the look-out for Novelties suitable for manufacturing purposes, and we shall be glad to obtain articles for clients.

9, 10 DOMINGO STREET, LONDON, E.C.1



VELOUTY de DIXOR PARIS .. COMBINED CREAM AND POWDER

The advertised line that you are asked for

DAINTY PRESENTATION

Samples free upon receipt of tradecard or billhead

Prices:—Full size pot	21/- doz.	Retail	2/9
Super Tube	22/-	"	3/-
Large "	14/-	"	2/-
Handbag,	3/-	"	6d.

Made in three shades: WHITE, IVORY and NATURAL

Obtainable from your regular Wholesaler or direct from the Sole British Agents:
DEBACQ & HARROP, 68 Newman Street, Oxford Street, LONDON, W.1

Recommend the Standardised Tooth Paste

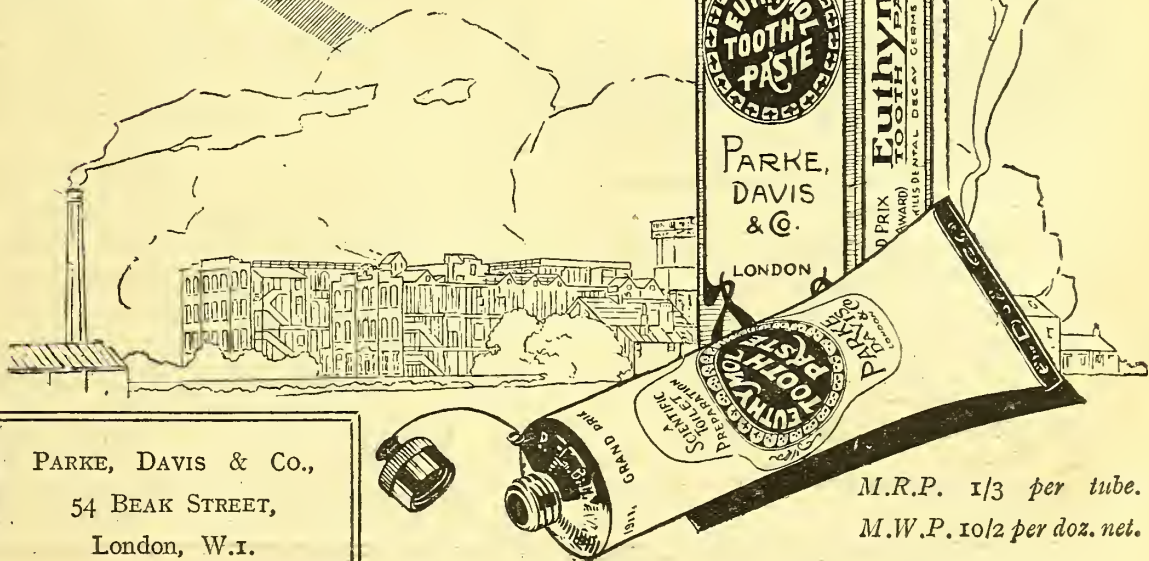
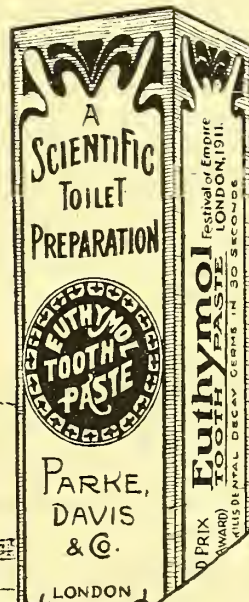
TO maintain our widely-advertised claim that Euthymol Tooth Paste is able to "kill dental decay germs within 30 seconds," every batch of this dentifrice is standardised to a definite carbolic acid coefficient of not less than 0.14. Every ingredient has also to pass stringent purity tests in our own laboratories.

You can, therefore, recommend Euthymol whole-heartedly. It will justify your confidence in its merit.

Moreover, Euthymol is a profitable line—especially if you buy on special terms.

Euthymol TOOTH PASTE

*Terms will be
sent on request*



PARKE, DAVIS & CO.,
54 BEAK STREET,
London, W.1.

M.R.P. 1/3 per tube.

M.W.P. 10/2 per doz. net.



Pile up Big Profits with Sorbo Sponges

SORBO Sponges are a line from which you may count with certainty on a good and steady protected profit all round the calendar. They are so well-known and so superior to the ordinary rubber-sponge as to be a continual advertisement for the chemist who sells them. Every Sorbo Sponge is separately wrapped in a hygienic cellophane bag.

Order now from your Wholesaler or direct from us. Price list and trade terms on application.

SorboSponge

THE MOST ABSORBENT RUBBER SPONGE

Retail prices from 1/3 to 10/6 each.

Some other quick-selling Sorbo Lines

Floating Bath Toys, Bath Mats, Complexion Gloves, Bath Straps, Insoles, Heel Elevators, Massage Pads, etc.

Write for particulars.

SORBO RUBBER-SPONGE PRODUCTS, LTD.
Sorbo Works, Woking, Surrey.
Telegrams: "Sorbo, Woking." Telephone: Woking 966.
(2 lines)

G. B. KENT & SONS, LTD.

Are known the World over as
the Largest Manufacturers of

BEST BRITISH BRUSHES

Please write for full Particulars to—

75 Farringdon Road, E.C.1.



BRITISH TOOTH BRUSHES

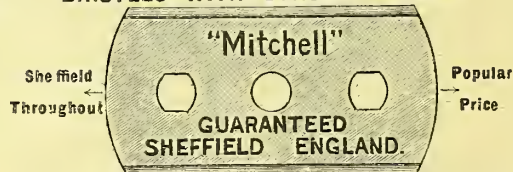
WILL NOT COLLAPSE
IN WATER.

THREE SHAPES:
"DENTAX"
"ROLAX" &
"TERJAX"

Scientifically formed to cover all the necessary actions for perfect hygienic cleansing inside, outside and between the teeth.
STERILIZED PURE BRISTLE
SILVERED WIRE DRAWN.
10/6 per doz.

Guaranteed Best British Workmanship.
C. F. MARSHALL & SON, Devonshire Works,
Devonshire Rd., Hackney, E.9

BRISTLES WITH STRONG POINTS.



Lasts Longer Wonderful Edge Every Blade Guaranteed

THE "MITCHELL" BLADE

1/6 (Made in Gillette and Autostrop Patterns) 3/-
for 50% Profit for You. for

6 TESTIMONIALS THAT TELL, SHOWCARDS THAT SELL. 12
R. S. MITCHELL, Unity Works, Langsett Rd., SHEFFIELD.

To Overseas Traders

We have a special Drug Department and expert Buyers for all kinds of Drugs, Chemicals, Hospital requisites, Photographic, Optical and Dental Goods.

Indents promptly and carefully executed for all parts of the world if accompanied by Bankers' Credit.

Original Invoices supplied.
Moderate Buying Commission.

All discounts allowed.
Enquiries Invited.

FOWLIE & BODEN, LTD. (John Murdoch Department)
29/35 CITY ROAD - LONDON, E.C.1

STILL BROADCASTING SAMPLES! To Increase YOUR Trade

THE extensive and intensive advertising campaign constantly running in connection with "Harlene" continues and will continue to draw immense response from all over the country. Thousands of Free Trial Gift Parcels are dispatched to new applicants every day, thus increasing the already colossal retail business:

Do you stock the following "Quick Sellers"?

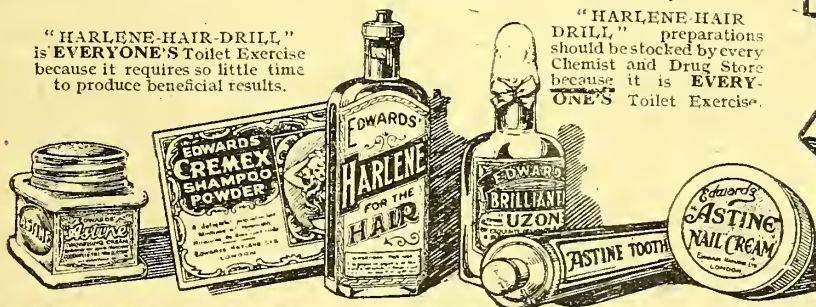
'Harlene' for the Hair 'Astine' Vanishing Cream
'Uzon' Brilliantine 'Astine' Tooth Cream
'Cremex' Shampoo Powders 'Astine' Shaving Stick
'Astol' for Grey Hair 'Astine' Nail Cream

Every day "Harlene-Hair-Drill" becomes more popular and every day the demand for "Harlene" preparations becomes greater. Don't be behind the times and turn away good business because you have not got sufficient stocks.

PLACE YOUR ORDER TO-DAY.

"HARLENE-HAIR-DRILL" is **EVERYONE'S** Toilet Exercise because it requires so little time to produce beneficial results.

"HARLENE-HAIR-DRILL" preparations should be stocked by every Chemist and Drug Store because it is **EVERYONE'S** Toilet Exercise.



A NEW LINE.
'JUNOFLORIS'
SPRING BREATH.

A Breath Purifier and Anti-septic Mouth and Stomach Deodorant in Tablet Form — NOT a Cachou. An entirely New and Original Line which does not compete with anything in existence. Prices advertised (min. retail)

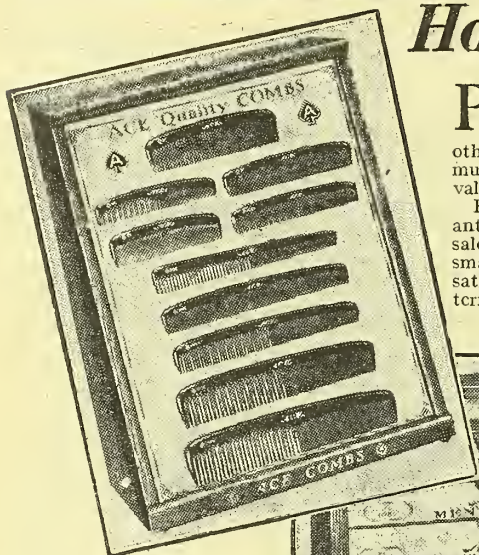
7½d. and 1¼ per box.
Makers' Prices:
6/8 and 12/- per doz.
Less 20% discount.



EDWARDS' HARLENE, Limited

20, 22, 24 & 26 LAMB'S CONDUIT STREET, LONDON, W.C.1

How do you measure profit?



Each individual, strong, indestructible, well made and finished comb is protected by a stout, transparent envelope, and as will be seen from the illustration the handy arrangement of the stock facilitates rapid selling. Net price of Cabinet containing 10 doz. Combs

£5.5s.

PROFIT is something more than the mere difference between buying and selling costs. There are other very important factors which must be considered in estimating the value of a sale.

How much of your—or your assistant's—time is spent in effecting the sale? Is the effort required great or small? Is your customer completely satisfied? Measure these points in terms of £, s, d. and you will

have the real value of your sale. Because the Ace Comb Cabinet is a very real money-saver, it has been welcomed by dealers throughout the country. With this cabinet on your counter your comb sales will be immensely simplified. The whole range of combs is attractively displayed on the front of the Cabinet, while any comb is immediately at your hand at the rear of the Cabinet.

**HARD
RUBBER**



COMBS

THE ACE COMB CABINET contains 1 dozen combs each.

No.	Description	Retailing at	Total
288	Men's Combs ..	1/3	15 0
1085	" " " " " "	1/4	18 0
1029	" " " " " "	1/6	18 0
1074	Dressing Combs ..	1/4	18 0
1024	" " " " " "	1/6	18 0
50	Bobbed Hair Combs ..	1/-	12 0
63	" " " " " "	1/3	15 0
64	" " " " " "	1/8	21 0
70	" " " " " "	1/-	12 0
3156	" " " " " "	1/3	15 0
Total Retail Price ..			£7 17 0

AMERICAN HARD RUBBER CO.

(BRITAIN), LTD.,

13a FORE STREET, LONDON, E.C.2.

Sole Distributors—**PENNEY & CO., LTD.**
16/18 BEAK STREET, REGENT STREET, W.1.

G.A. 5361

The Scottish House for Druggists' Sundries

NEW SEASON'S SPONGES, SPONGE BAGS, BATHING CAPS, SWIMMING WINGS, ELASTIC HOSE, TRUSSES. SURGICAL DRESSINGS & APPLIANCES always held in variety.

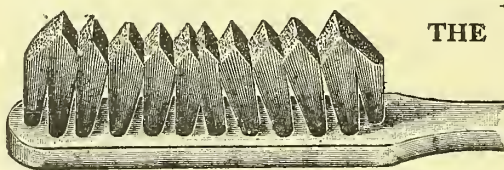
MUNRO, M'LAREN & SUTHERLAND, 17 Cadogan Street, GLASGOW.

Telephone: No. 3918 Central.

Telegraphic Address: "Perfumery," Glasgow.

Sole Wholesale Agents in Scotland for POTTER & MOORE'S LAVENDER, WALKER'S "SIXTY-MINUTE" WORM CAPSULES FOR DOGS. ZETT'S CLOTH BALLS. SASSAFRAS HEAD SOAP.

Mail Orders receive prompt attention.



THE "ODENTIC TWO-WAY" Regd. TOOTH BRUSH

has its tufts of **PURE BRISTLES** so arranged that it offers the maximum resistance in brushing in both directions. Made by a firm with 100 years' experience.

Two sizes: **GENTS. (4 Rows); LADIES, (3 Rows).**
Small Show-card with every 1-dozen.

Manufacturers: **W. R. SPEER & SON, 215 Dalston Lane, London, E.8**
Obtainable from all Wholesalers.

BIDWELLS' PROPHYLACTIC TOOTH BRUSHES

IN THREE SIZES



SILVERED WIRES.

EACH IN CARTON.

CASTLE MILLS, AXMINSTER. On 6 dozen lots own name free on Carton, if desired.

Telegraphic Address: "CRESSWELL, HOLB., LONDON."

Telephone: No. 1432 Holborn.

THE SPONGE HOUSE

INTERNATIONAL SPONGE IMPORTERS, LIMITED,
CRESSWELL BROTHERS BRANCH

Sponge Importers, Exporters and Merchants, and Chamois Leather Dressers,

18 and 19 RED LION SQUARE

(New Warehouses and Steam Bleacheries,
45, EAGLE STREET)

LONDON, W.C.

WITH THE LARGEST STOCKS OF ALL SPONGES IMPORTED DIRECT FROM THE FISHERIES AT LOWEST PRICES.



BUYERS ARE INVITED TO CALL AND INSPECT OUR LARGE AND VARIED STOCKS, AND THEY
 WILL CONVINCE THEMSELVES THAT THEY ARE DEALING IN THE "CHEAPEST MARKET"

UNBLEACHED MEDITERRANEAN SPONGES in Original Cases



HONEYCOMB.

Extra Choice. Finest
 Texture and Shape.
 The Pick of all the
 Fisheries.

Pieces in Case.	Average Price per Piece.
300 Toilet at	9d.
250 " "	1/-
200 " "	1/6
160 " "	2/-
140 " "	2/6
120 " "	3/-
100 " "	3/6
90 Medium Bath	4/6
80 " "	5/6
72 " "	6/6
60 " "	7/6
45 Large	8/6
30 " "	10/6

HONEYCOMB.

Toilet & Bath.

Good 2nd Quality.

Pieces in Case.	Average Price per Piece.
270 at	6d.
180 " "	9d.
170 " "	1/-
160 " "	1/6
140 " "	2/-
120 " "	2/6
110 " "	3/-
90 " "	3/6
80 " "	4/-
75 " "	4/6
70 " "	5/-
65 " "	5/6
60 " "	6/6

FINE TURKEY

SOLIDS.

SELECTED
SHAPES.

1st Quality.

	Average Price in per Case. Piece
Nursery 200 at	1/-
Toilet 150 "	1/6
" 100 "	1/9
" 100 "	2/-
" 80 "	2/6
Bath 50 "	3/-
" 36 "	4/-
" 24 "	5/-



LOOSE GOODS DEPARTMENT.

SPONGES IN SMALL PACKAGES. Fine Turkey. Fine Egyptian and Honeycomb. In 1st, 2nd and 3rd Qualities, Bleached or unbleached (state which in ordering). On strings of 1 dozen pieces, or loose in bags. At per doz.: 2s., 3s., 4s., 6s., 8s., 12s., 15s., 18s., 24s., 30s., 36s., 42s., 48s., 54s., 60s., 66s., 72s. Bleached Cuban. At per String or Dozen. Wool, Grass, Yellow and Fine. 1s., 2s., 3s., 4s., 6s., 8s., 12s., 15s., 18s., 24s.

NEW VELVET HONEYCOMB. Soft, Durable and large for money. Suitable for Toilet and Bath purposes.

PRICES—Cut Shapes

3s., 4s., 6s., 8s., 12s., 15s., 18s., 21s., 24s. per dozen.

" Natural Shapes 4s., 6s., 8s., 12s., 15s., 18s., 21s., 24s., 30s., 33s., 36s. "

Strongly recommended where an inexpensive Toilet and Bath Sponge is required.

MERCOLIZED WAX

— : for the Complexion : —

and

STALLAX

— : a Shampoo : —

TWO substantial and well-advertised lines which show a handsome profit to the Retailer, and, moreover, may be stocked fearlessly owing to the Manufacturers' most liberal Sale or Return Guarantee.

Both are obtainable in two sizes, and their reputation and sterling value assure a steady turnover.

Advertising Matter, advice, and sales help are always available from

DEARBORN (1923) LIMITED
37, GRAY'S INN ROAD LONDON, W.C.1.

**CHAMOIS, WHITE
 WASHABLE LEATHERS,
 and WHITE SPLITS**
 for all purposes.

W.K.G.



WALTER K. GILBERT & Co.
 6 Dowgate Hill, London, E.C.4.

Telegrams: "Gilbertia, London."
 Telephone: Central 4570.

ESTABLISHED 1870.

THE STANDARD GLASS & HARDWARE CO., LTD.

BOTTLES
 and JARS

CHEMICAL
 GLASSWARE

MEDICAL and SURGICAL
 GLASSWARE

SODA FOUNTAIN GLASSWARE
 ICE SHELLS all kinds

STRICTLY
 WHOLESALE ONLY

26 FINSBURY SQUARE, LONDON, E.C.2.

Telephone:
 Clerkenwell 1772

Telephone: Axminster 5.

Telegrams: "Coate, Axminster."

COATE & CO. (Axminster) Ltd.

The London Brush Works, Axminster, Devon.

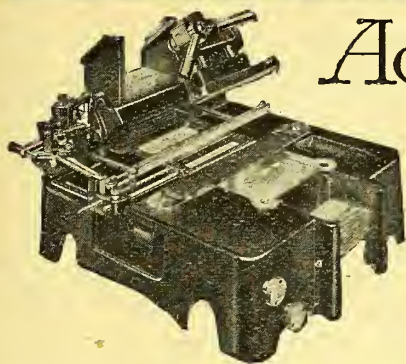
Estab. 1847.

Manufacturers of Super British Brushes

Our Special "PROPHYLACTIC" Tooth Brushes—

3 row Hard, Medium, Soft, Yellow Hair @	...	...	...	16/- per dozen
4 " " " " " " " " " " " "	...	...	...	18/- " "

Orders for one gross supplied in Cartons with customer's name and address free.
 Every Brush Guaranteed. British made by British Labour. Send for our present list of prices.



Addressograph

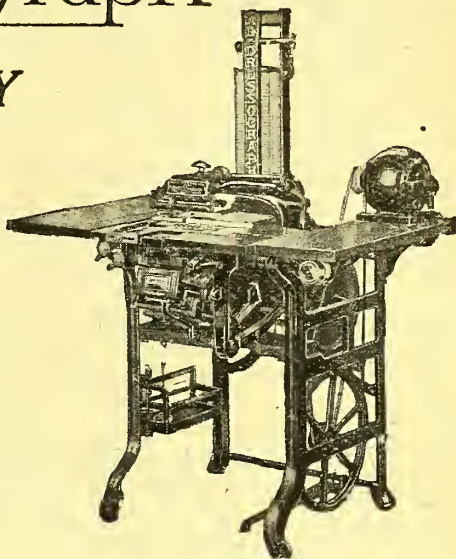
PRINTS FROM TYPE

EFFICIENCY

MEANS

SPEED ACCURACY

and **ECONOMY**



ECONOMY. An essential factor in the efficient conduct of any business—use machinery where possible.

ACCURACY. It is impossible for the Addressograph to make a mistake—it is automatically accurate—never guesses.

SPEED. Hand Machines 800-1,000
Electric Machines 2,000-3,000
Different addresses per hour.

ADDRESSOGRAPH LIMITED

47 GRANGE ROAD, WILLESDEN GREEN, N.W.10

'Phone : Regent 6565.

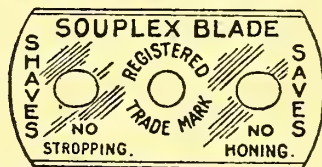
Showrooms : 79 KINGSWAY, W.C.2

'Phone : Willesden 1330.

HAVE YOU GOT A STOCK OF

HAVE YOU GOT A STOCK OF SAFETY RAZOR BLADES?

If Not, You are Missing Profits



SOUPLEX are without doubt the finest Safety Razor Blade (Gillette pattern) the world produces, and every time you sell one you make a permanent customer.

Thousands of pounds are being spent this year to bring them before the notice of the public, and to show **SOUPLEX** Showcards means quick sales and good profits.

The sales of **SOUPLEX** have increased over 1,000 times in the past year, and every week they grow.

The profits on **SOUPLEX** are good and cannot be varied; no cutting is permitted; they sell to the public at 2/6 per packet of 10 and cost you 20/- per box of 120.

FROM GOOD WHOLESALE HOUSES
IN ALL PARTS OF COUNTRY.

WHOLESALERS.

We supply **SOUPLEX** to wholesalers only, and every wholesaler who stocks them is sure of guaranteed profits; there is no difficulty in selling them, for your traveller to say **SOUPLEX** to a shopkeeper is to book business. We supply special show-cards with dummy packets for travellers, and so prevent you losing samples and money.

If you have not yet got **SOUPLEX** write at once for prices and terms.

SOUPLEX LTD.
MORECAMBE, Lanc.

Sell "WINCARNIS" as a Summer Tonic!

Extensive Advertising is creating a big hot weather demand for it. Good profits to be made for you!

IN the newspapers covering your district you will find the Wincarnis hot weather advertisements. They are creating a new demand for Wincarnis—a summertime demand among people who can't stand the hot weather. Show Wincarnis in your window, and you will bring these people to your shop. New customers, mostly. Here's a rapid and profitable way of building up your summer trade!

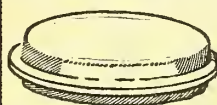
Remember, there's a good profit on Wincarnis. And there's prestige as well. 40 years of high repute and medical recommendation. It means a lot in sales.

WINCARNIS

The Tonic Wine that's always in demand!

Send to-day for a supply of our new showcards, cut-outs and display material and make a really good display. You will find it will pay!

COLEMAN & COMPANY, LIMITED, Wincarnis Works, Norwich



PRICES OF CACHETS REDUCED

2/- per 1,000 all sizes and series

Special Quotations for Quantities.

Carriage Paid on 5,000.

Phone : **CICERO S. CLARK,** 12 RICHMOND ROAD,
PARK 116. LONDON, W.2

PURE EXTRACT OF MALT

C. TOLKIEN & CO., BLACKBURN,
Commercial Mills & Apollo Chemical Works,

Also - - - 102 DONEGALL STREET, BELFAST.

NURSE HARVEY'S MIXTURE

A safe, simple and reliable remedy for Children's Ailments is advertised so extensively in the daily and weekly Press as to bring mothers to the retailer without effort on his part.

The selling has been done before the mother reaches the chemist, and, having supplied her, it is only common sense to claim she will buy other family necessities from him. Moreover, the continuous demand for it produces a quick turnover.

For Direct Terms apply to—

OSCAR SCRUTON & CO., YORK

ATKINSON & BARKER'S INFANTS' PRESERVATIVE

THE BEST AND SAFEST INFANTS'
MEDICINE OF OVER 120 YEARS' STANDING.

Prices and Terms on application to **R. BARKER & SON, Ltd.**
13 Wesley St., C-on-M., MANCHESTER.

**DOES
NOT
CONTAIN
any
SCHEDULED
POISON.**

Natural Mineral Waters.

WE beg to inform the Trade that we are regularly receiving consignments of Natural Mineral Waters from the Continent and other parts of the world.

AESCLAP
AIX - LES - BAINS
APENTA
APOLLINARIS
BARIUM
BILIN
BONNES
BOURBOULE, LA
BUXTON
CARLSBAD
CARLSBAD SPRUDEL-
SALT

CHALLES
CHATEL GUYON
CHELTENHAM SPA
CONDAL
CONTREXÉVILLE-
PAVILLON
COULSWORTHY
EMS WATER
EMS SALT & PASTILLES
EVIAN-CACHAT
FACHINGEN
FLITWICK
GIESSHUBLER (MATTONI)
HUNYADI JÁNOS
INSALUS
KISSINGEN
KRONENQUELLE
LEAMINGTON SPA
LEVICO
MALVERN (ALPHA)



MONT DORE
MONTMIRAIL
MONTREUX
NOCERA UMBRA
PERRIER
PLOMBIÈRES
PLUTO
POLAND
PURGOS
ROYAT
RUBINAT
ST. BOES
ST. GALMIER
SANGEMINI
SELTERS
SULIS
TANSAN
VALS
VICHY-CÉLESTINS

Do. HÔPITAL
Do. GRANDE GRILLE
Do. SALTS
Do. PASTILLES

VITTEL
VILLACABRAS
WIESBADEN
WIESBADEN
SALTS & PASTILLES
WILDUNGEN
WOODHALL SPA
WOODHALL MOTHERLYE
WYCHIA

Sole Agents for

VICHY-CÉLESTINS

(And the other State Springs of Vichy.)

PRICES OF THE ABOVE QUOTED ON APPLICATION.

Any Natural Mineral Water not in stock, if procurable can be imported to special order during the Season.

INGRAM & ROYLE, LTD.

BANGOR WHARF, 45 Belvedere Road, LONDON, S.E.1

Telephone: HOP 4343 (2 lines).

Telegrams: "INGRAM ROYLE, WATLOO, LONDON."

LIVERPOOL: 19 South John Street.

BRISTOL: Bath Bridge.

Telephone: Bank 4528. Telegrams: "CELESTINS, LIVERPOOL."

Telephone: 1113. Telegrams: "SPRUDEL, BRISTOL."



You can sell
Roboleine
THE FOOD THAT BUILDS THE BODY
in the Summer, too

JUST as we have proved, by Summer Advertising campaigns, that the Public can be interested in this fine product when the days are long, so can you increase your "Roboleine" turnover by putting in a good word for it as opportunity offers.

Nothing is more effective in restoring strength to the system sapped by strenuous days, than "Roboleine."

Recommend it and reap your reward.

OPPENHEIMER, SON & COMPANY LTD.
179 Queen Victoria Street, London E.C. 4.

O & S





Miniature
bottles retail-
ing at 6d. also
supplied.

Retail price	Price to Pharmacist	Profit on Outlay
1/3	9/- per doz.	66 $\frac{2}{3}$ %
2/3	15/- " "	80%

Special Bonus
terms for
window
displays.

Three Reasons Why Burgoyne's Fruit Saline should be sold by every Pharmacist.

Superlative Quality. Advantage to the Public.

Handsome Profit to the Pharmacist.

That Burgoyne's Fruit Saline shows advantage to the public and a handsome profit to the Pharmacist is obvious from the above figures. But

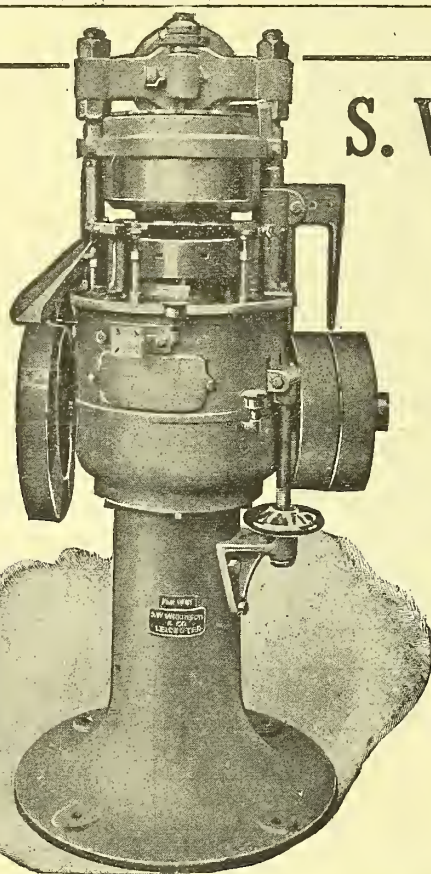
that this Fruit Saline compares favourably with *any* other for quality can only be fully realised by means of an actual test.

Burgoyne's Universal Fruit Saline

Knowing as we do the exceptional quality of Burgoyne's Fruit Saline we naturally desire that as many Pharmacists as possible should make

this test. Will *you* do so? We shall be most happy to send you a liberal sample on request.

BURGOYNE, BURBIDGES & CO., Ltd., East Ham, London. E.6.



S. W. WILKINSON & CO.

WESTERN ROAD, LEICESTER.

Rotary Tablet Machines

These Machines are now made in 4 sizes :

12-Punch Ordinary for Tablets from $\frac{3}{8}$ " to $\frac{7}{8}$ " diameter.

Output 400 per min.

20-Punch Ordinary for Tablets from $\frac{1}{4}$ " to $\frac{1}{2}$ " diameter.

Output 700 per min.

12-Punch Heavy for thick Tablets and Blocks

1" diameter. Output 250 per min.

18-Punch Heavy for thick Tablets and Blocks

1" diameter. Output 400 per min.

LISTS ON APPLICATION.

SINGLE punch machines made in
5 sizes for tablets from $\frac{1}{8}$ " to $1\frac{1}{2}$ "
diameter, also lozenges.

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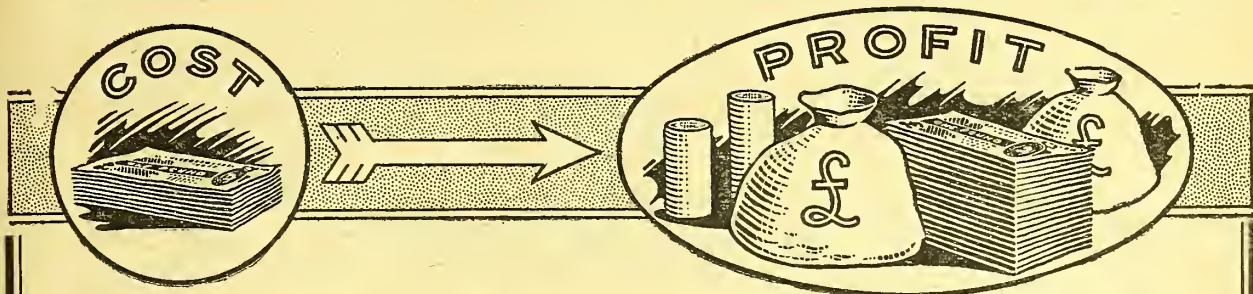
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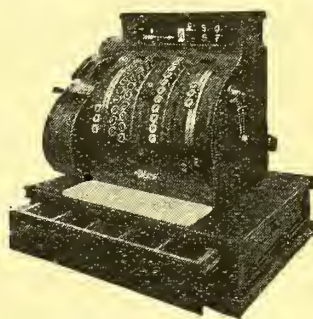
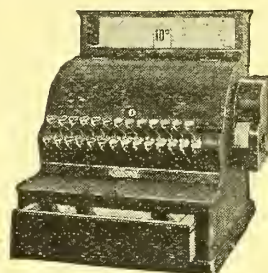
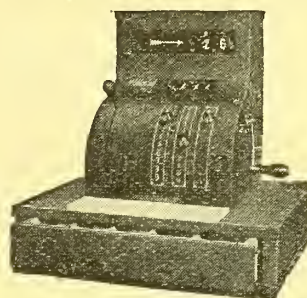
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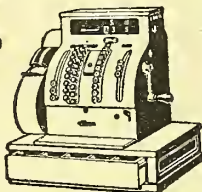
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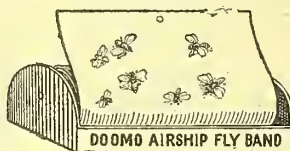
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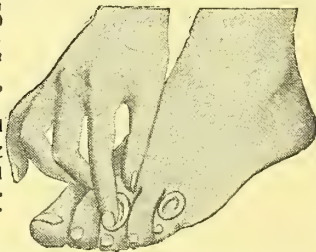
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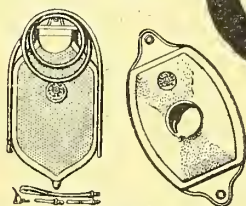
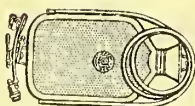
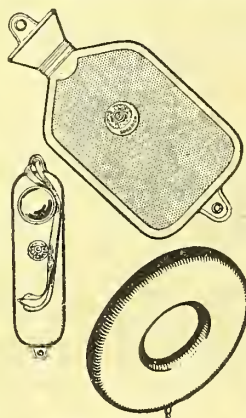
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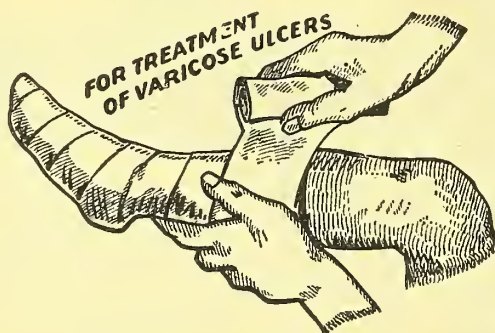
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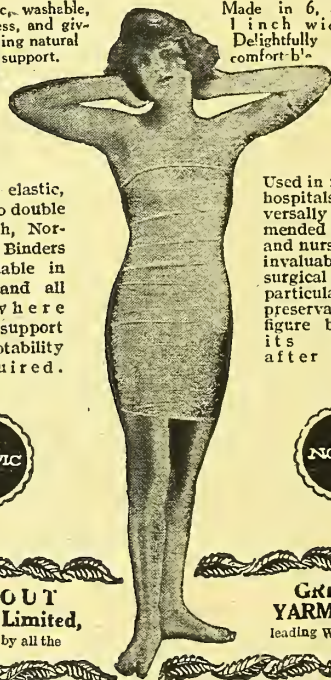
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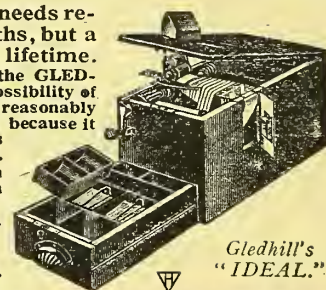
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Coming Events

Thursday, July 1

Pharmaceutical Society of Great Britain (Metropolitan and Home Counties Branches).—River outing to Marlow. Leave 17 Bloomsbury Square at 2.30 p.m. by motor coach for Maidenhead. Thence by launch. High tea at Marlow. Book of vouchers, 12s. 6d. each.

SOUTH-WEST LONDON CHEMISTS' ASSOCIATION.—A sports day and outing will be held at the ground of S. Maw, Son & Sons, Ltd., New Barnet, at 3 p.m., on July 7. Charabancs leave Clapham (The Plough) at 2 p.m.

Business Changes

MR. F. A. BATES, chemist and druggist, has taken over the business of Mr. J. G. Cobb, 169 Berridge Road, Nottingham.

HINDES, LTD., toilet-requisites manufacturers, have removed from Tabernacle Street, London, E.C.2, to 60 Parker Street, Kingsway, W.C.2.

JOHN W. MAWSON & CO., LTD., manufacturing chemists and medicinal capsule makers, 142 Norwood Road, London, S.E.27, have removed to Court Road, West Norwood, S.E.27.

English and Welsh News

The Editor will be obliged if subscribers will send him marked copies of newspapers containing items of interest for insertion in this or other news sections.

Contracts

The following tenders have been accepted by the bodies named:—

Blackburn Education Committee.—Booth & Openshaw (Blackburn), Ltd., science materials.

H.M. Crown Agents for the Colonies.—Arthur H. Cox & Co., Ltd., Brighton, medicinal tablets to Nyasaland.

Inquests

The Westminster coroner concluded an inquest, on June 21, on the body of Edith M. Thompson, an actress professionally known in Australia as Edith Drayton, who was found dying on May 30 in a flat in Southampton Row, W.C., occupied by Mr. Thomas Woollidge, chemist and druggist. The cause of death was certified to be septicaemia. Dr. Weir, pathologist, stated that he found no trace of any injury that might have caused septicaemia, and, in reply to Mr. Powell, who represented Mr. Woollidge, said that he could not mention any particular method that had been used to cause the condition. Mr. John Webster, F.I.C., analyst to the Home Office, stated that he had analysed certain organs and had found no poisonous or noxious substance. Mr. Thomas Woollidge, chemist and druggist, who elected to give evidence, said that his shop was at 9 Little Newport Street, while he had two wireless apparatus shops in Lisle Street, W.C. The first time he met Mrs. Thompson was when she came to his Newport Street shop and purchased a lipstick on May 25. She asked whether he knew of any rooms to let. He said he had one vacant in Southampton Row. He took her temperature, but made no other examination. He took her temperature from a humane point of view as her landlord. Further questioned, the witness added that, besides being a chemist, he was a St. John Ambulance man. The Coroner: How many young women have you had there in the last year?—Two. The witness denied that he had attended Mrs. Thompson in any way or had given her any medicine. The Coroner: Were you the chemist who appeared before me in 1919 in the Billie Carleton case?—Yes. I rather got the better of you then, didn't I?—Yes, sir. Perhaps you have got the better of me now?—No, sir. Summing up, the coroner said that it was a case of suspicion, but there was no evidence sufficiently strong to show what took place. He therefore must advise the jury to record a verdict of "Death from septicaemia," and to find that there was not sufficient evidence to show how it was brought about. The jury returned a verdict accordingly.

Birmingham

Contributions to the Hospital Saturday Fund made on June 19 included: Cadbury Bros., Ltd., £3,461; W. & T. Avery, Ltd., £321; W. Canning & Co., Ltd., £75; Singleton & Cole, Ltd., £73; John and E. Sturge, Ltd., £37.

Among the successful candidates at the recent examination for the Fellowship of the Institute of Chemistry (Food and Drugs Section) was Mr. Cecil J. House, B.Sc., A.R.C.S., who is well known in Birmingham trade circles.

On June 18, about 115 members and friends of the Birmingham Pharmaceutical Association visited the works of the Dunlop Rubber Co., Ltd. The magnitude of the business, the machinery and the industry of the workpeople were some of the characteristics which most impressed the visitors. All parts of the manufacture were inspected, from the receipt of the raw rubber to the completed articles—tires of all descriptions, tennis balls and golf balls. The company entertained the visitors to tea, and Captain E. C. Bennison, President, expressed the thanks of the members to Messrs. Dunlop and to Mr. A. G. Perret, of the technical advisory division, education section, who had made the necessary arrangements, and who replied. A number of the visitors came in their own motor-cars, and Mr. Perret

stated that he found that about 90 per cent. of the tires were "Dunlops." A collection on behalf of the Pharmaceutical Society's Benevolent Fund realised £3.

Durham

Business is quiet, as may well be imagined, in this mining area. There has been an influx of visitors during this week, resulting in a good effect on the business of the city. The summer assizes, the annual regatta and the University boat race between Durham and Edinburgh have all helped towards this end.

Some of the chemists' windows are quite attractive with suitable summer displays. J. Garbutt, Ltd., have a cheerful show of Harrogate Health Salts and toilet preparations. Masons, Ltd., have a good display of cameras and photographic supplies. Mr. W. Smith has a window including Sparklets and other summer lines.

Liverpool

A few tickets are still available for the Liverpool Pharmacy Club's motor-coach excursion to Church Stretton on July 4. Early application should be made to the joint secretaries, Miss Piper and Miss Scott, 64 Gainsboro' Road.

The students of the Manchester School of Pharmacy had an introduction to the manufacturing side of pharmacy when they paid a visit to the laboratories of Ayrton Saunders & Co., Ltd., Liverpool, on June 17, afterwards inspecting the Hanover Street premises. The visitors were invited to lunch with the staff in the canteen; lunch was followed by impromptu dancing, in which students and staff were partners.

Sheffield

Mr. McConnachie has been induced to remain on the council of the Sheffield Pharmaceutical and Chemical Society, but Mr. H. B. Hammond, through business pressure, is unable for the present to offer himself for re-election.

Mr. H. Antcliffe, who is representing the Pharmaceutical Society at the coming-of-age celebrations of Sheffield University on July 1 and 2 (*C. & D.*, June 19, p. 833), is a member of the University Court of Governors.

Miscellaneous

IN THE COURTS.—In Pontypridd County Court, recently, the Pharmaceutical Society of Great Britain obtained judgment for the sum of £5, with costs, against C. D. Sellers, Nelson, Cardiff, for the improper use of the letters "M.P.S."—At Leicester Police Court, on June 22, Alfred Cyril Howard (28), Filbert Street, a cashier in the employ of Wand's, Ltd., chemists, was remanded for a week on a charge of falsifying accounts in respect of the sum of £139 10s. Bail was granted.

Scottish News

Brevities

At Hawick Sheriff Court, on June 18, Francis Oliver Renwick, Minto, was fined £10 for unlawfully acting as a veterinary surgeon.

A recent issue of the "Edinburgh Evening Dispatch" contained a graph showing some of the more important by-products obtained from coal.

There seems to be a general weakening of the antipathy of medical men to secret remedies; judging by the increasing number of prescriptions for such remedies.

Glasgow

The rambling section of Glasgow Pharmacy Club will visit Campsie Glen on June 29, leaving Queen Street Station by the 3.29 p.m. train.

Mr. W. S. Guthrie, chemist and druggist, has taken over the business of Mr. T. Guthrie, chemist and druggist, 204 Glasgow Road, Clydebank.

The premises of W. E. Taylor & Co., manufacturing chemists, Cadogan Street, were involved in an outbreak

of fire on June 16 believed to have been caused by a defective electric circuit.

Among the tenders recommended for acceptance by the health committee of Glasgow Corporation are the following: Raimes, Clark & Co., Ltd., Edinburgh, drugs; J. F. Macfarlan & Co., Edinburgh, oils; W. G. Taylor (Southall Bros. & Barclay, Ltd.), Birmingham, dressings.

Irish News

Brevities

A new pharmacy has been opened recently by Miss R. Tomkin at 19 Longwood Avenue, Dublin.

Two plate-glass windows in the shop of Mr. Thos. Campbell, Ph.C., 46 High Street, Omagh, were smashed recently with a stick by a tramp, who was returned for trial. The damage was estimated at £15.

At Ballymena, recently, Thomas J. Watterson, Cullybackey, was charged with having incited Elizabeth Laughton to use drugs for an unlawful purpose. Accused was returned for trial at the Assizes, bail being fixed at £100 and two sureties of £50 each.

Belfast

At a recent meeting of the Senate of the Queen's University Mr. Harold Totton, public analyst, Belfast, was given the title of Lecturer in Public Health (Chemistry).

At Belfast Police Court, on June 17, Frederick McCormick was sentenced to six months' imprisonment with hard labour for being in illegal possession of a "dangerous" drug, morphine. Prisoner pleaded "Guilty." Inspector Spears said the prisoner had been attending Dr. McKenna for treatment, and after some visits he forged the doctor's name to obtain morphine. Dr. Thomas H. McKenna gave evidence of having treated the prisoner for asthma. Eighteen of the prescriptions produced were forged. A chemist's assistant said that early in April the accused called and produced a prescription for morphine tablets. The accused had been calling from time to time with prescriptions, and on May 11 witness became suspicious, and on ringing up Dr. McKenna it was discovered that accused had forged the doctor's name.

French News

From the "C. & D." Paris Correspondent

M. TIFFENEAU has been nominated a member of the Permanent Committee for the revision of the Codex.

THE ANNUAL MEETING of the General Association of Retail Pharmacists is to be held this year at the Paris Faculty of Pharmacy on July 18.

M. MARC BRIDEL, chief pharmacist of a Parisian hospital, and member of the Paris Society of Pharmacy, has been nominated Professor of Vegetable Physics at the Museum (Jardin des Plantes), in place of the late M. Maquenne.

A NEW FRENCH POSTAGE STAMP will bear the effigy of Laënnec, the inventor of the stethoscope, who died in 1826. Readers of Kipling's "Rewards and Fairies" will remember that "Moshour Lanark" figures in the tale entitled "Marklake Whitehes."

THE PREFECT OF POLICE has issued a decree forbidding the use of containers with more than 10 per cent. of lead for medicaments and dentifrices. This also applies to stoppers for bottles containing medicine or dentifrices. An exception is made in favour of properly tinned lead stoppers. The decree comes into force on July 15.

EXTRACTS FOR PREPARING SYRUPS.—Although concentrated extracts are extensively used for preparing syrups, this practice has not yet received legal sanction. M. Gastard has just published a volume on this question, which seems to show that the real trouble lies in the diversity of the concentrated extracts issued by various firms. What is wanted is a unification of formulas, preferably drawn up by the Codex Committee.

Legal Reports

Venereal Disease Act.—At Clerkenwell Police Court, London, on June 22, Percy John Murrell, trading as the Orion Chemical Manufacturing Co., was summoned for having given advice at Percival Street, E.C., by advertisement in a publication, in connection with the treatment of venereal disease, he not being a qualified medical practitioner. He pleaded "Guilty." Mr. Herbert Muskett, solicitor for the prosecution, said that these cases were infrequent. The defendant occupied a room at the address mentioned. On April 26 a detective, in response to a pamphlet, called on him and purchased two preparations, at 3s. 6d. and 3s. each. The defendant gave advice as to their use, and with the preparations were printed instructions. A fine of £20, with £5 5s. costs, was imposed.

Hairdressers' Appeal.—At Tower Bridge Police Court, London, on June 17, Samuel Solomons, or Sanders, and Arthur Rose, hairdressers, appealed against the refusal of a licence for massage, etc., by the London County Council (*C. & D.*, May 22, p. 661). Solomons also appealed against the revocation of a similar licence. Among the witnesses for the appellants was Mr. Jack Galloway, chemist and druggist, who said he was managing director of P. H. Galloway, Ltd., manufacturing chemists, Walworth Road. Sanders bought a hair pomade from witness's firm. It was a very good one for darkening the hair when it started to go grey. He looked at an analyst's report on the pomade, and noticed that one ingredient had been missed out. Mr. J. D. Cassells (for the appellants): What is that?—Lead acetate. Mr. Dines (for the London County Council): This pomade was made by you; did you also print the label?—No, we supply them unlabelled. The labels were put on at Messrs. Sanders & Rose's laboratories. It is not correct to say that the pomade was made at Messrs. Sanders & Rose's laboratories?—No. What is the value of a pot of pomade this size?—I am not at liberty to answer that. The Magistrate: Is this mixture really good?—Yes. Have you tried it yourself?—Yes. With good effect?—Yes. The appeals were allowed, without costs.

Mineral Water Manufacturers' Action.—In the High Court, Dublin, on June 16, in an action brought by Cantrell & Cochrane, Ltd., mineral water manufacturers, against Bridget Ruane and James Ruane, Mr. James Henry, B.L., for the plaintiffs, applied to have a consent received made a rule of Court. The plaintiffs sought an injunction to restrain the defendants, who carry on business at Athenry, co. Galway, from selling, or exposing for sale, or having in their possession for sale, aerated or mineral waters not manufactured by the plaintiffs, contained in bottles bearing the plaintiffs' registered trade-mark of "Cantrell & Cochrane," embossed or moulded thereon, or in any form calculated or intended to deceive, or to enable others to pass off such aerated or mineral waters as the manufacture of the plaintiffs, or to lead to the belief that aerated or mineral waters not manufactured by the plaintiffs are of the plaintiffs' manufacture, and from infringing the plaintiffs' trade-mark. Counsel said that the defendants having forwarded to the plaintiffs all bottles in the defendants' possession moulded with the plaintiff company's trade-mark, a consent had been arrived at between the parties that all further proceedings in the action be stayed, on terms providing that the defendants, their servants and agents, be restrained at all times hereafter from selling or exposing for sale aerated or mineral waters not manufactured by the plaintiff company contained in bottles bearing the plaintiffs' registered trade-mark. The defendants also agreed to pay plaintiffs' costs of the action. Mr. Marnan, B.L., for the defendants, agreed to the terms of the consent, which Mr. Justice Johnston received and made a rule of Court. Similar rulings were made in two other cases.

Action for Wrongful Dismissal.—In the Mayor's and City of London Court, on June 17, Mr. Frank C. Madden, M.Sc., A.I.C., analytical chemist, Longton Avenue, Sydenham, S.E., brought an action against Mr. Arthur W. Holland, company secretary, 3 Lombard Street, claiming the sum of £65, three months' salary,

as damages for wrongful dismissal. Mr. Beresford, counsel for the plaintiff, said that he was engaged in March 1925 as analytical chemist by By-Products, Ltd. The defendant was the secretary of the company. The plaintiff considered that as from May 13, 1925, he was in the employ of By-Products, Ltd., and that his engagement would be subject to reasonable notice. A week before October 12 Mr. Holland told the plaintiff that his services would not be required after that date. When proceedings were started a defence was put in that the plaintiff had only been employed on trial, and had never been on the permanent staff. Mr. Madden, giving evidence, said that from September 1918 to September 1920 he was employed as an assistant chemist in a Government laboratory, and from then until 1925 he studied research and physical chemistry at University College. He was then appointed student demonstrator at the College. At the interview with Sir Charles Fielding (chairman of By-Products, Ltd.) salary or notice was not discussed. He commenced work and received £5 weekly. No complaint as to his work was made during his employment. Cross-examined by Mr. J. H. Bell, solicitor for the defendants, the plaintiff said that in the Government laboratories his job was analysing metals and alloys for the Admiralty. He disagreed with the suggestion that that was totally different work from that which he had to do for By-Products, Ltd. If he had desired to leave By-Products, Ltd., he would have felt bound to give three months' notice. Witness admitted that a chemist from the Stratford works of the company worked with him for two weeks, but that was to show him the methods in use at Stratford for analysing a certain type of pyrites. It was an ore which gave great difficulty by ordinary methods, but someone at Stratford had worked out a special process which gave satisfactory results. Mr. Rhodes, general secretary of the British Association of Chemists, said that he had been a practical chemist for several years, and in his view the ordinary reasonable notice given in the profession was at least three months. "I have special experience of this," he added, "because we have many men who came under our unemployment benefit fund." Witness said that his society always recommended that the giving of a week's notice, in the absence of agreement to that effect, should be fought. A great many cases had arisen, but had been arranged. Mr. C. B. Woodley, assistant secretary of the same association, gave evidence of a similar character. For the defence, Mr. Arthur Holland said he was acting secretary of the defendant company. He had not personally received any complaints with regard to the plaintiff. Dr. Miller said he had considerable experience with different firms, and the usual terms of agreement included three months' notice. He had, however, known several cases in which work similar to that in the present case had been involved, and in which a week's notice had been considered sufficient. The Judge: Can you define commercial analyses? The Witness: It is simply this. In both cases accuracy is required, but in commercial practice economy of time is also required. Cross-examined: You would be very surprised if you were given a week's notice?—Yes, I should. Mr. A. W. Jenkins said he was analytical chemist to the defendant company. He had a written agreement providing for three months' notice on either side. Mr. Madden was conscientious, but slow. Cross-examined, witness said that, after Mr. Madden left, two new assistants were appointed. One was paid £3 a week and the other £2. Judge Shevell Cooper said the plaintiff was a young man with very good scientific qualifications and some useful experience. His evidence as to terms of his engagement was uncontradicted, and must be accepted. The sole question to be decided was what was a reasonable notice. In the absence of any agreement in the matter, the view he took was that a man of the qualifications and experience of the plaintiff was entitled to three months' notice. He gave judgment for £60, with costs, deducting one week's salary which the plaintiff had already received.

NEW GERMAN PHARMACOPOEIA.—The draft of the new sixth edition of the German pharmacopœia will be laid before the Reichsrat for final approval on June 25, and the work will probably be issued in August.

New Companies and Company News

P.C. means Private Company and R.O. Registered Office

R. F. BLANKLEY & Co., LTD. (P.C.).—Capital £500. Objects: To carry on the business of chemists, druggists, opticians, etc. The directors are: R. G. Blankley and C. F. Fleming. R.O.: 24 School Road, Sale.

WINTER & AINGER, LTD. (P.C.).—Capital £250. Objects: To carry on the business of chemists and druggists, dentists and opticians, etc. The directors are: Mrs. C. Ainger and E. Ainger. R.O.: The Market Place, Caistor.

NEWINGTON'S PHARMACIES, LTD. (P.C.).—Capital £500. Objects: To acquire the business of Newington's Cash Pharmacy, carried on by R. H. Newington at 8 Market Parade, Portland Road, South Norwood. R.O.: 8 Market Parade, Portland Road, South Norwood; London, S.E.25.

CHARLES MARGINSON, LTD. (P.C.).—Capital £1,000. Objects: To carry on the business of manufacturing, analytical, dispensing, and photographic chemists, druggists, drysalers, pharmacy proprietors, opticians, stationers, patent medicine proprietors, etc. The directors are: C. C. Marginson and G. C. Marginson. R.O.: Whitestake, near Preston.

ROBERT WOOD & Co., LTD. (P.C.).—Capital £200. Objects: To carry on the business of watch and clock and watch-case makers and repairers; jewellers, gold and silver smiths, dressing-bag makers, chemists, druggists, etc. The directors are: W. Widdall, W. Pickup, H. Beswick, and T. H. Gowrie. R.O.: Room 18, Union Bank Chambers, Church Lane, Oldham.

DIRECT DRUGS, LTD. (P.C.).—Capital £2,000. Objects: To carry on the business of wholesale or retail chemists and druggists, drysalers and manufacturers, importers and exporters of and dealers in drugs, chemicals, etc. The directors are: H. G. Dawson, E. C. Q. Croft, and J. Goulay. R.O.: Donington House, 30 Norfolk Street, Strand, London, W.C.2.

E. CROSS & SON, LTD. (P.C.).—Capital £1,000. Objects: To acquire the business now carried on at Birmingham as "E. Cross & Son," and to carry on the business of retail chemists, herbalists and druggists, drug and spice merchants, scientific instrument dealers, artists' colourmen and merchants, oil, paint and colour merchants, etc. The directors are: E. G. Cross and A. E. Cross. R.O.: 11 High Street, Birmingham.

TIDMAN & SON, LTD. (P.C.).—Capital £6,500. Objects: To acquire the business of Tidman & Son, Ltd., carried on at Buchell Street, Wapping, and 69 Basinghall Street, London, E.C., and elsewhere, and to carry on the business of chemists, perfumers, soapmakers, dealers in druggists' sundries, proprietors of patent medicines, etc. The directors are: J. C. Fox and D. S. Caldwell. Solicitor: James C. Fox, Finsbury Court, Finsbury Pavement, London, E.C.2.

BELL & HOWELL Co., LTD. (P.C.).—Capital £1,000. Objects: To carry on the business of manufacturers and importers of, dealers in and agents for the sale of motion or cinematograph picture and other photographic cameras, films, plates and camera and cinematograph accessories of all kinds; laboratory apparatus, optical and other lenses, photographic supplies and sundries, etc. The directors are: J. H. McNabb, R. J. Kittredge, and A. S. Howell. R.O.: 320 Regent Street, London, W.

BRITISH DYESTUFFS CORPORATION announce a dividend of 2½ per cent. on the ordinary shares.

JOSEPH NATHAN & Co., LTD., have declared a dividend of 3½ per cent. on the "A" Seven per Cent. Preference shares for the half-year ended December 31, 1925.

TILDESLEY, LTD.—C. P. Barrowcliff, of 55/7 Albert Road, Middlesbrough, accountant, was appointed receiver and manager on June 15, under powers contained in debenture dated September 2, 1925.

Insurance Act Dispensing

Record of matters concerning Chemists' interests in the National Health Insurance Acts

ENGLAND AND WALES

Local Reports

Bolton.—At a meeting of the Insurance Committee, on June 11, further cases of inaccurate dispensing were reported. In one case the certificate of the Committee's analyst differed materially from that of the chemist's analyst. In the other case a director of the firm of chemists had expressed regret at the error. The dispenser had weighed the ingredient on a piece of paper, but omitted to balance the paper. In the first quarter of the year there were 110,287 prescriptions dispensed for insured persons in Bolton.

Hampshire.—At a meeting of the Insurance Committee, held recently, it was reported that in 1925 259,757 prescriptions were dispensed, the average cost being 4.7d. for ingredients, and 4.4d. for dispensing fees. The sum credited to chemists was £9,913 8s. 1d.

Kent.—At a meeting of the Insurance Committee, on June 9, the Pharmaceutical Service Subcommittee reported two cases of incorrect dispensing, and it was decided that the chemists concerned should be cautioned.

London.—The Pharmaceutical Committee held a meeting on June 15, Mr. J. A. Thompson (chairman) presiding. The report of the Central Checking Bureau for February 1926 showed a margin of error of 0.03. The secretary reported particulars of action taken to provide adequate pharmaceutical service in a district of the Western area. Information concerning a doctor influencing his patients' choice of chemist, in which action had been taken; a prescription for a hypodermic syringe had been disallowed on the ground that it was not marked "for self-administration of insulin." The chemist had supplied the syringe in good faith, but the doctor refused responsibility; the Panel Committee considered that the chemist should obtain payment from the doctor, and the Committee decided that the chemist should be so informed; chemists should satisfy themselves before supplying a hypodermic syringe that it is for insulin, either by the fact that insulin is ordered on the same prescription or the syringe is qualified by the words "for self-administration of insulin"; particulars relating to the supply of insulin and vaccines for 1925 as follows:—

	Insulin	Vaccines
Number of prescriptions ...	6,145	1,691
Total cost ...	£1,861 8s. 0d.	£395 1s. 1d.
Number of patients ...	2,026	1,022

The number of hypodermic syringes supplied for the fourth quarter, 1925, was 173, with a total cost of £12 14s. 5d. The number of patients was 155. The following comparative figures for the first quarter, 1925 and 1926, were given as follows:—

	1925	1926
Number of prescriptions	2,200,074	2,221,033
Cost of ingredients ...	£32,724 16s. 10d.	£25,124 0s. 5d.
Cost of dispensing fees	£41,625 3s. 10d.	£41,494 6s. 2d.
Av. ingredient cost ...	3.57d.	3.80d.
Av. dispensing fee cost	4.54d.	4.48d.

The Standing Subcommittee reported particulars of their investigations into certain complaints regarding the dispensing service. The report was adopted.

Oxfordshire.—At the June meeting of the Insurance Committee it was reported that two test prescriptions had proved unsatisfactory. In one instance the deficiency was considerable, and the Pharmaceutical Subcommittee expressed the opinion that the dispenser had not exercised sufficient care in dispensing the medicine, and recommended that he be reprimanded and informed that in any future case of neglect more drastic action would be taken. This was agreed to.

PARCEL POST.—London district offices and head offices in the provinces now accept for the Dominions and certain foreign countries (more than sixty in all) parcels weighing up to 22 lb., instead of the former limit.

Association Affairs

Belfast.—A meeting of the Chemists' and Druggists' Society of Ireland was held in the rooms, 11 Waring Street, Belfast, on June 16, the President (Mr. F. Storey) in the chair. The meeting was called to consider the continuance of classes for the various grades in connection with the forthcoming examinations under the Pharmaceutical Society of Northern Ireland. Dr. Wren, of the Municipal College of Technology, attended and explained the position with regard to the College, and, after discussion, it was decided to ask the secretary of the Ulster Retail Drug Trade Association to include particulars of the proposed classes with the first notice going out to the trade. The Chemists' and Druggists' Society have equipped their rooms for providing teaching facilities, and have asked Mr. A. H. Storey, Ph.C., to undertake the necessary instruction, and he is arranging classes for the members and arranging for extra teachers. A post-graduate course is also being arranged by the Society.

London (S.W.).—The annual meeting of the South-West London Chemists' Association took place on June 15, the President (Mr. F. G. Wells) in the chair. A letter from Miss Buchanan was read, in which she thanked the members for their expression of sympathy in her enforced retirement from pharmacy. The secretary's report, presented by Mr. W. K. Fitch, stated that the total membership of the Association was 223, showing an increase of 34 on the previous year. While agreeing that this was encouraging, he appealed for each member to do his best to attain the ideal of 100 per cent. membership. The social report was given by Mr. G. F. Barratt, and the sports report indicated the success of the recent innovation of a tennis club at Wimbledon, which it is hoped to continue next year. These reports were accepted, as was also that of the treasurer (Mr. T. Beech), which showed a balance of £71 in the bank. A sum of £2 2s. was voted for the Early Closing Association. The new officers and committee were then elected as follows: *President*, Mr. F. G. Wells; *Vice-Presidents*, Messrs. D. A. Rees and T. Beech; *Secretary*, Mr. W. K. Fitch; *Social Secretary*, Mr. G. F. Barratt; *Sports Secretary*, Mr. J. E. Monaghan; *Treasurer*, Mr. T. Beech; *Committee*, Miss A. T. Borrowman, Mrs. Mills, Messrs. E. A. Atkins, G. B. Brook, T. James, J. Jones, W. E. Mason, C. T. R. Pretty, and W. A. Shakerley, with Mr. John Keall *ex-officio*, being a representative on the London Pharmaceutical Committee. Mr. F. G. Wells, in thanking the members for again electing him as President, said how much he appreciated their support and assistance during the past year. A short discussion took place on the Dangerous Drugs Regulations, 1926, and the secretary was asked to lodge a protest against paragraph seven, which instructs retail pharmacists to keep all dangerous drugs in a locked container.

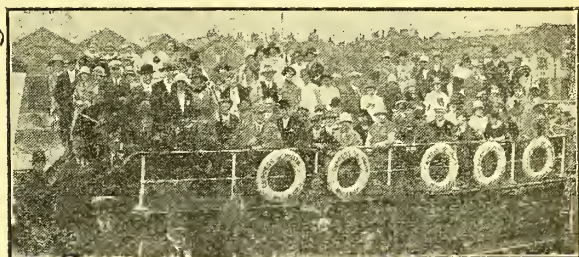
London (W.).—At a Committee meeting of the London (Western) Pharmacists' Association, held on June 22, the following were elected officers for the session 1925-27: *President*, Mr. C. G. Bonner; *Vice-President*, Mr. H. Martin; *Treasurer*, Mr. W. E. D. Shirtliff; *Secretaries*, Messrs. T. Morley Taylor and P. S. Windwood; *Social Secretary*, Mr. W. B. Falding.

Public Pharmacists.—At a Council meeting of the Guild of Public Pharmacists, held at Bloomsbury Square, London, W.C., on June 16, seventeen new members were elected, and Messrs. Jennings, late of King's College Hospital, and Antcliffe, member of Council of the Pharmaceutical Society, who have retired from the public services, were elected the first honorary members. It was decided to publish a register of public pharmacists and to circulate the first issue to the managing committees of voluntary hospitals and others and to supply copies to the advertisers of vacancies as occasion arises. The question of the design of certificates and of their issue was deferred for further consideration. Congratulations were voted to Mr. Herbert Skinner, a member of the Guild, on his appointment as Vice-President of the Pharmaceutical Society.

Summer Outings

Meggessons' Summer Outing

ON June 12 the employees of Meggeson & Co., Ltd., were the guests of the company in the annual summer outing in the Thames Valley. The party, among whom were Mr. H. Vincent Dodd (chairman) and Mrs. Dodd, Mr. Arad Feather (vice-chairman) and Mrs. Feather, proceeded in motor-coaches by way of Kingston, Chertsey, and Runnymede to the Castle Hotel, where



ON BOARD THE "EMPRESS OF INDIA"

a capital luncheon was served. The toast of "The Firm" was proposed by Mr. W. G. Kay, Mr. H. Vincent Dodd responding. "The Guests" was proposed by Mr. Arad Feather, and Mr. H. A. Green replied. Afterwards the journey was continued in the private steam launch, the "Empress of India," where tea was served, to Marlow, returning to Maidenhead. There, motor-coaches were in readiness to convey the party to London, which was reached by way of Slough, Colnbrook, and Hounslow, after a most enjoyable day.

Manchester Chemists' Picnic

THE annual picnic of the Manchester Pharmaceutical Association took place on June 16, the venue being Moreton Old Hall, the party proceeding by motor charabanc and private car. The weather conditions were ideal. After leaving Manchester, by way of Alderley Edge, the party reached Gawsorth Church, where a halt was made, the vicar showing the party over the



Photo]

PARTY ENTERING ASTBURY CHURCH

[Cleworth

ancient and historic church, which possesses a book of records dating back to the fourteenth century. From there the party proceeded to Astbury Church, where they again dismounted. A quick run was made to Moreton Old Hall, near Congleton, where a capital high tea was awaiting the party. Afterwards the party explored the various parts of the old hall. After this the party took part in sports and games until time came to leave for home. A delightful afternoon's outing was the unanimous vote.

MR. A. STANSFIELD, chemist and druggist, has acquired the business of Mr. J. Boor, chemist and druggist, 218 Hyde Road, West Gorton.

Sporting Events

In connection with the Preston District Thursday League, the Pharmacy cricket eleven met the Tramway team on June 17, the latter proving successful by 52 runs to 38.

Edinburgh Pharmacy Golf Club held a competition for the captain's (Dr. Coull) prize over Craigmillar Park course on June 16, with the following result: (1) W. Hourston, (2) John Noble, (3) E. Brindle.

In a recent cricket match between Southampton chemists and Bannister Court the former were victors by 47 runs. Kendall (41), Pickup (13), Wilson (41), Young (14), and Corden (13) were the most successful batsmen for the chemists.

The summer meeting and Virol cup competition of the Glasgow Pharmacy Golf Club was held at Bishopbriggs on June 15. There was splendid weather and a good attendance. Play resulted as follows:—*Class 1*: D. G. Mackenzie 78, W. Forrest 78. *Class 2*: J. Erasmuson 79, J. T. Simpson 83.

A cricket match was played on June 9 between the Reigate and Redhill Pharmacists' Association and the local Chamber of Commerce. The chemists were captained by Mr. T. P. Padwick, and, batting first, were all out for 69, of which Mitchell scored 24 and Walmsley 18. At the close of play their opponents had obtained 49 runs for 8 wickets.

The final of the "Script" billiards handicap for the Shircliffe cup was played on June 9 at the Shaftesbury Hotel, London, W. The competitors were Mr. C. Happold (scratch) and Mr. H. J. Shuttleworth (owes 100) in a game of 300 up, the former winning the cup. The final scores were:—C. Happold 300, H. J. Shuttleworth 245, the winner's best break being 26.

The monthly medal competition of the London Chemists' Sports Club was played on June 10 on the sports grounds of S. Maw Son & Sons, Ltd., New Barnet. The leading scores were:—

F. Cooper ...	76—10=66	G. G. Gibson ...	105—20=85
W. E. Cane ...	89—18=71	T. Rawlins ...	110—24=86
E. A. Atkins ...	91—14=77	F. G. Wells ...	112—24=88
R. Collings ...	103—24=79	D. P. Rae ...	114—24=90
H. B. Walker ...	98—18=80		

The annual golf match, wholesale v. retail, between the members of the Aberdeen Pharmacists' Golf Club took place on the Murcar course recently, the retailers winning by four matches to two. Details are as under:—

Wholesale				Retail			
J. Forsyth ...	...	...	1	A. Booth ...	...	...	0
C. W. Hendry ...	...	...	0	C. Michie ...	...	...	1
S. Anderson ...	...	...	0	J. Farquhar ...	...	...	1
P. Murray ...	...	...	0	J. Michie ...	...	...	1
A. Smith ...	...	...	1	G. McKay ...	...	...	0
D. Ross ...	...	...	0	H. M. Dugan ...	...	...	1

The ladies' tennis (singles) tournament for the championship of the London Chemists' Associations took place at the sports ground of S. Maw, Son & Sons, Ltd., New Barnet, on June 17, over 100 visitors being present. The competition began keenly in the first round between Mrs. Swanston (Northern), last year's winner, and Mrs. Foster (South-Eastern), last year's runner-up, and resulted in the success of Mrs. Foster. Miss Freke (South-Western) beat Miss Mayes (Walthamstow), Miss Berry (Western) beat Miss Mumford (Eastern), and Miss Miller (North-Eastern) had a bye. Mrs. Foster and Miss Miller reached the final, which ended in a victory for Mrs. Foster by 6—1, 6—3. Tea and refreshments

were supplied by Messrs. Maw in the pavilion. The presentation of the cup was reserved for June 24, the day of the inter-association sports, but the personal mementoes were presented to Mrs. Foster and Mrs. Swanston by Mrs. Porter. Appropriate remarks were made by Mr. Porter, and a hearty vote of thanks was accorded on the association's behalf by Mr. J. T. Walters (Northern London President). As rain began, the evening was given over to dancing in the pavilion, Mr. V. Porter acting as M.C.

In the first round of the bowling tournament of "The Script" Sports Club, in connection with the "Glaxo Team Tournament," East London was at home to West Ham on June 17, the scores being as follows:—

Eastern.—Armitage, Wood, Styles, Laurence (skip), 15.

West Ham.—Wathen, Rippin, Reed, Kirkpatrick (skip), 29.

In a semi-final of the "Club Team Tournament," the Northern entertained the South-Eastern team at Wood Green on June 17. At the twenty-first end the score became 16 all. At the extra end the Northern secured the odd point and the match.

Northern.—Tranent, Anderson, Downing, Bowie (skip), 17.

South-Eastern.—Biffin, Winzer, Ralph, Hirst (skip), 16. In the first round of the singles championship, G. Roe (Western) met L. A. E. Kirkpatrick (West Ham), at Fulham, on June 16, in a keenly contested match, running to twenty-four ends. At the twenty-third end the score was 18 all. At the twenty-fourth G. Roe secured three points and the match.

The annual athletic meeting in connection with Evans, Gadd & Co., Ltd., wholesale chemists, Exeter, took place on the County Ground at St. Thomas, in ideal weather, on June 19. At the conclusion of a full programme the prizes were distributed by Mrs. Southerden, who was handed a bouquet on behalf of the staff. Tea was served to the visitors during an interval by the firm's employees. The various events resulted as follows:—

Kicking football.—1, Snell; 2, Way; 3, W. Tucker. *100 yards handicap*.—1, A. S. Tucker; 2, Cox; 3, Snell. *One mile walking handicap*.—1, Kelland (100 yards); 2, Ware (scratch); 3, Haycock (40 yards). *100 yards ladies' race*.—1, M. Came; 2, K. Shaw; 3, A. Manley. *Slow cycle race*.—1, Way; 2, Bradford. *Tug-of-war*.—Warehouse team. *Egg-and-spoon race*.—1, K. Shaw; 2, Blackmore; 3, V. Pollard. *Two miles cycle race*.—1, Trevelyan; 2, White; 3, Bradford. *Relay race*.—Office team. *Sack race*.—1, Roach; 2, Blackmore; 3, W. Tucker. *High jump (ladies)*.—1, M. Came; 2, P. Redwood; 3, K. Shaw. *High jump (gentlemen)*.—1, Bradford (4ft. 10in.); 2, Cox (4ft. 9in.); 3, A. S. Tucker (4ft. 8in.). *100 yards veterans' handicap*.—1, Cornish (10 yards); 2, Gale (scratch); 3, Lipscombe (scratch). *Employees' childrens' handicap*.—1, H. Moore; 2, V. Milton; 3, C. Gale. *Obstacle race*.—1, W. Tucker; 2, Cox; 3, White.

Gazette

Bankruptcy Acts

ADJUDICATION.

ALLEN, R. G., 152 Cecil Street, Moss Side, Manchester
perfumery maker.

COST OF LIVING.—Official figures give the cost of living on June 1 as 68 per cent. above that of July 1914.

The North Metropolitan Branch held the annual meeting recently at 17 Bloomsbury Square, by the courtesy of the Pharmaceutical Society, with Mr. J. T. Walters in the chair. The balance-sheet showed a satisfactory balance, and Mr. Walters was re-elected *Chairman*, Mr. Watson *Vice-Chairman and Treasurer*, and Mr. H. Skinner *Secretary*. The Committee of the North London Association was re-elected, together with Mr. H. B. Walker (Barnet), representing outer districts.

Pharmaceutical Society of Northern Ireland

Council Meeting

THE monthly meeting of the Council of the Pharmaceutical Society of Northern Ireland was held on June 18 in the Society's temporary headquarters, 29 Wellington Place, Belfast. The President (Mr. Horatio Todd, J.P.) was in the chair. There were present also Messrs. F. Storey (Vice-President), James Dundee, W. J. Hardy, H. Lancashire, J.P., F. T. Smith, J.P., S. S. Badger, J.P., J. E. Connor, J.P., John Maxwell, W. J. Rankin, Joseph Moffet, W. S. Taylor, H. G. Pring, O.B.E., J.P., Samuel Suffern, T. W. McMullan, M.P., Dr. S. E. A. Acheson, Professor Small, and Mr. W. E. Wilson. Mr. D. L. Kirkpatrick (secretary) and Professor Wren, of the Municipal College of Technology, and Mr. W. D. L. Greer (registrar) were in attendance. At the opening of the proceedings the President introduced Mr. Moffet, the new Inspector of the Society.

QUESTION

Mr. STOREY asked had the Home Office replied to the query which the last meeting decided should be put before them as to whether indentured proof of apprenticeship was absolutely necessary.

The SECRETARY said there was no official reply.

The REGISTRAR said he had asked the legal adviser of the Home Office, and he said "No." It was open to the Council either to have indentures or not, just as they wished. While there was nothing to compel indentures, possibly the spirit of the Act intended there should be indentures.

Mr. STOREY said he asked the question because their own legal adviser stated at the last meeting it was essential they should have indentures.

The PRESIDENT said the matter would come up later on.

INVESTMENTS

The Finance Committee recommended that a sum of £1,500 be invested, £1,000 in Ulster Loan and £312 10s. in Ulster Savings Certificates, which could mature to £500. In reply to the President, Mr. Dundee said that would leave about £600 balance in the meantime. The report was adopted. This was agreed to and later the secretary submitted draft letters which were approved. Various letters regarding preliminary registration were also dealt with.

COURSES OF STUDY

A letter was read from Mr. Gillies, B.Sc., Principal of the Technical School, Ballymena, asking the Council to recognise that school as an institution in which instruction may be given in Part I of the course in the regulations. It was decided to give provisional recognition and that the President, Professor Small and Mr. Lancashire inspect the school and report to the committee. The following books were recommended as text-books for the course in "Business Methods": "Book-keeping and Commercial Practice," by Henry H. Smith (Pitman); "A Course of Business Training," by G. K. Bucknall (Pitman); "Window Dressing," by G. L. Timmins (Pitman). It was proposed by Professor Small that the secretary group as many apprentices as possible according to districts. Also, that he send a circular letter to the secretaries of the various technical subcommittees explaining the position and asking for information as to possible classes, grouped in two subjects for alternate periods of two years.

Mr. HARDY asked why they did not accept service in the Free State.

The PRESIDENT: We cannot legally do it until we make some arrangement about reciprocity.

Mr. HARDY: This is not reciprocity. It is service.

Mr. McMULLAN: Could we not write to Dublin?

The PRESIDENT: They are hardly ready yet.

Mr. LANCASHIRE asked whether, if a man served two years in the Free State and came North to complete the four years, that would be accepted.

The PRESIDENT: Yes, if it was before the passing of the Act.

Mr. CONNOR: Has the four years to be continuous?

The PRESIDENT: Not necessarily.

In reply to Mr. McMullan, the SECRETARY said the

apprenticeship mentioned in the Manorhamilton case was not yet started.

Mr. STOREY said it was a question of reciprocity. They wanted reciprocity with the Free State.

The PRESIDENT said it would be a matter of arrangement with the Society in Dublin.

Mr. HARDY: Our men will be up against it going South.

The PRESIDENT: We had better wait to see what sort of examination the Free State puts up.

Mr. STOREY said in the new Bill in Dublin there would be drastic changes and it would be as well to wait.

The SECRETARY said he had written Mr. Hanna explaining the position. It was not merely a direct negative that was sent.

Mr. MAXWELL moved the adoption of the minutes, which was agreed to.

Speaking with regard to the classes, Mr. TAYLOR said that he did not think the committees would start them. The regional committees were careful about the rates, and would say that the Council should provide the instructors. They would have to be paid five shillings an hour for 250 hours. In Fermanagh there would only be six or eight apprentices. Who was going to pay the instructors? The regional committees would not do it. Then there were no laboratories, and in some districts there would be no instructors. In reply to the President, Mr. Taylor said the regional committees in Fermanagh had not been asked yet, but he was sure they would not do it. They objected to these matters involving additional expenditure.

Professor WREN said it was not necessary the whole of the money should be paid by students' fees. The schools obtained Government grants on the attendance of students, so that the financial difficulty was not so real. It was possible county apprentices might be called on to pay higher fees than in the city, but that was not unreasonable.

The PRESIDENT: Do you think we would get a grant towards this?

Professor WREN: Certainly. Proceeding, he said that Dr. Garrett, the Senior Chief Inspector of Education, regarded the formation of these classes as a vital necessity. As to laboratories in Enniskillen, he believed they could get the use of St. Catherine's Laboratory. That was not an unusual thing with technical schools. He did not think the question of instructors was insuperable. Where there was a laboratory there was an instructor, and, as a rule, it was not difficult to get them to do it. The only difficulty might be in regard to botany.

Mr. TAYLOR: In Enniskillen that will not be a difficulty.

Mr. CONNOR said in a place like Newry it would be very expensive to get teachers for classes of half a dozen persons.

Mr. TAYLOR said the new regulations were going to stifle the supply of apprentices. In reply to Mr. Connor, the President said that after July 1928 the apprentice must take his classes under the new syllabus.

Mr. BADGER said in Magherafelt there would only be about four boys to take the classes.

The PRESIDENT said that the Ministry of Education would do a great deal to help them in the matter.

Mr. BADGER said if the supply of country apprentices went down, the supply of city assistants would go down.

The Council next took up consideration of notes on the regulations, and in the course of a long discussion which followed, Professor WREN said he was dissatisfied with the way chemistry was taught and the books employed. In the new syllabus a better hope for the boys had been provided. He did not suppose any boy would buy all the suggested books. He did not want primarily to push the boys through the examination, but to help them to read and think. That was why the list was an extended one. He would strongly recommend them not merely to prescribe a small book to cover the syllabus. Mr. Hardy moved that the notes be adopted. Mr. Badger seconded the motion, which was agreed to.

THE QUESTION OF INDENTURES

Mr. CONNOR moved the omission of the indenture form. It was, he said, becoming impossible to get apprentices, and the new regulations would add to the difficulty. Indentures should be left to the individual employer. Mr. BADGER seconded.

The PRESIDENT said their solicitor's opinion was that

apprentices had to be indentured. If they decided not to have indentures, it would leave them open to things that might be unpleasant. Against that the Home Office advised that indentures were not compulsory.

Mr. BADGER said as they were under the Home Office they were quite safe in following its advice.

Mr. LANCASHIRE said a uniform system of apprenticeship would add to their status and improve the class of apprentices.

Mr. TAYLOR said he invariably indentured apprentices. The matter should be left to the employer.

Mr. STOREY said there would be difficulty in getting a form of indenture to cover all classes in the trade, including the wholesalers. He would not like to see the whole matter dropped. The spirit of the Act was in favour of indentures. It was, however, a matter for the chemist himself. There would, as far as he saw, be no unanimity on the matter.

Mr. RANKIN urged a postponement of the matter till their Society had settled down.

Mr. PRING said if the indenture was not compulsory they could not compel the use of whatever form was adopted. It would be an advantage to have a standardised form.

Professor SMALL said there was a standard form in Great Britain, where all apprentices must be indentured.

Mr. HARDY said he never indentured an apprentice, and had always been treated honourably. The matter should be left optional.

Mr. Connor's motion was passed, with three dissentients. The PRESIDENT said the matter could be raised again, if necessary.

NEW REGULATIONS PROPOSED

The Council next took up a notice of motion by Mr. W. J. Hardy (*C. & D.*, June 19, p. 811).

Mr. HARDY said the regulations were copied out of the calendar of the old Society. He had, however, come to the conclusion since he gave notice of motion that they required amendment. He had no member of the Council in his mind. It was a question of principle. The matter was referred to the Law Committee.

HORTICULTURAL POISONS

The Town Clerk of Belfast wrote forwarding applications for licences for the sale of horticultural poisons. The matter was referred to the Law Committee.

The SECRETARY reported on certain applications from Armagh, and intimated that the County Council had written that the regulations would be strictly enforced in future.

The PRESIDENT said it was up to their trade to make the thing a success. If registered traders like chemists did stock horticultural poisons they were bound to win in the end.

Mr. CONNOR said there were very few chemists who did not stock them.

NEW MEMBERS

On the motion of Mr. Dundee, seconded by Mr. Badger, the following pharmaceutical chemists were elected to membership:—

Addy, James Frederick, 33 Main Street, Bangor, co. Down.

Bingham, J. A., 1 Ashley Avenue, Belfast.

Black, John, 56 Church Place, Lurgan.

Byrne, Edward, Coalisland.

Camlin, George, 13 Salisbury Street, Belfast.

Chapman, R. S., Howard Street, Belfast.

Cherry, James McCully, 24 Frances Street, Newtownards.

Corrie, W. R., c/o A. Boyd & Co., Lisburn.

Cross, W. M., Kingsgate Street, Coleraine.

Deeny, H. J., St. Paul's Terrace, Falls Road, Belfast.

Deery, J., Newtownstewart, co. Tyrone.

Fyffe, Samuel Gailey, c/o Hanna's Pharmacy, Bangor, co. Down.

Glendinning, James, Waterloo Place, Londonderry.

Gorman, James McD., The Esplanade, Bangor, co. Down.

Hogg, S., 110 Shankill Road, Belfast.

Howe, W. H., 138 Lisburn Road, Belfast.

Irwin, S., 35 Great Victoria Street, Belfast.

Jeffares, Michael Henry, New Street, Donaghadee.

Johnston, G. B., c/o R. F. McCartney, The Diamond, Coleraine.

Johnstone, Herbert A., 6 Main Street, Larne.

Kelly, Edward, 27 Falls Road, Belfast.

Kelly, H. M., 98 Duke Street, Londonderry.

Laird, Robert William, 297 Grosvenor Road, Belfast.

Linehan, R., Glenone, Earlswood Road, Belfast.

Lyons, P. J., 8 Lower Crescent, Belfast.

McCartney, R. F., The Diamond, Coleraine.

McClelland, J. D., Main Street, Randalstown.

McKay, W. H. V., 12 Dunowen Gardens, Old Park Road, Belfast.

Mackey, Samuel George, Conway Square, Newtownards.

Mann, A. W., Medical Hall, Lurgan.

Millar, G. H., 133 Lisburn Road, Belfast.

Mitchell, W. G., William Street, Londonderry.

Montague, T., c/o Baxter, Ltd., Ballymoney.

Moore, H. F., 134 Royal Avenue, Belfast.

Patterson, David John, 31 High Street, Bangor, co. Down.

Pinkerton, D. J., 10 Cameron Street, Belfast.

Quinn, C. A., c/o Hugh Marshall, Ltd., Victoria Street, Belfast.

Robb, T. A., 395 Lisburn Road, Belfast.

Scott, J., 7 Clifton Crescent, Belfast.

Shillington, Joseph, c/o Harmur, Ltd., 29-31 Ann Street, Belfast.

Simpson, Victor, c/o J. & H. McRoberts, Shaftesbury Square, Belfast.

Smyth, William, c/o John Clarke, Ltd., 8 Donegall Square West, Belfast.

Tate, James, 7-9 Royal Avenue, Belfast.

Tate, Walter, 7-9 Royal Avenue, Belfast.

Walsh, J. A., 8 Upper Crescent, Belfast.

Watson, T. H. M., c/o J. S. Balmer, Ltd., Main Street, Bangor, co. Down.

Wellwood, John, 132 Grosvenor Road, Belfast.

Wright, Miss, 95 University Road, Belfast.

Young, J. C., c/o J. McRoberts, Ltd., 71 Ormeau Road, Belfast.

NEW ASSOCIATES

The following chemists and druggists and registered druggists were nominated as Associates of the Pharmaceutical Society of Northern Ireland:—

Andrews, A., Banbridge.

Ardis, Miss E. J., Dundalk Street, Newtownhamilton.

Ardis, S., Dundalk Street, Newtownhamilton.

Blackstock, J., 20 Thomas Street, Armagh.

Byrne, C. E., 34 Summer Hill, Warrenpoint.

Connolly, R., 30 Alliance Avenue, Belfast.

Coote, Mrs. E., 130 Connsbrook Avenue, Belfast.

Craig, H. L., Ferryquay Street, Londonderry.

Davis, C., c/o McBurney's Medical Hall, Kilkeel.

Davis, R. J., 44 Foyle Street, Londonderry.

Doig, C. E., 113 Castle Street, Belfast.

Elliott, W. M., 69 Cliftonville Avenue, Belfast.

Fulton, John, Sunnymede, Rosetta Park, Belfast.

Gillespie, James, Rathmore, Castlecaulfield, co. Tyrone.

Groves, R. J., 33 Bridge Street, Belfast.

Hamilton, R. S., Belview Avenue, Londonderry.

Johnston, J. W. H., Newtownbutler, co. Fermanagh.

Jones, Wm., Thomas Street, Portadown.

Kennedy, H. G., 20 Burmah Street, Belfast.

Lawson, Miss E. M., Main Street, Limavady.

Linton, E., 79 Hill Street, Newry.

Nelson, H. J., 62 Bow Street, Lisburn.

McAloney, Wm., 12 Corporation Street, Belfast.

McCartney, D. G., 23 English Street, Armagh.

McClellan, John, Fountain Street, Antrim.

McCormick, M. L., 29 Francis Street, Londonderry.

McDade, Miss Margaret, 130 Connsbrook Avenue, Belfast.

McEwen, R. A., 19 Hill Street, Newry.

McKee, J., c/o McBurney's Medical Hall, Annalong.

McLaughlin, J., 7 King Street, Coatbridge, near Glasgow.

Minnis, F. W., Saintfield.

Montgomery, Joseph, 1 Maryville Park, Belfast.

Neill, S., 24 English Street, Armagh.

Richardson, W. H., High Street, Portadown.

Sandford, J., 23 High Street, Portadown.

Shannon, T. M., The Drug Hall, Rathfriland.

Smiley, S. J., The Square, Castlewellsan.

Smith, H., 44 Foyle Street, Londonderry.

Stevenson, R., Medical Hall, Enniskillen.

Taylor, W. G., Markethill.

Thompson, J. A. K., Main Street, Dunmurry.

Walsh, D., 2 Newry Street, Banbridge.

White, James Waterside, Coleraine.

Wilkinson, James, 1 Duncain Gardens, Belfast.

Wright, Wm., c/o Macauley's Medical Hall, Downpatrick.

Forty-six pharmacists were proposed for next meeting and five chemists and druggists. The secretary intimated that the next meeting will be in the new rooms in Scottish

Provident Buildings.

Corner for Students

Conducted by Leonard Dobbin, Ph.D.

Communications should be addressed "Corner for Students," "The Chemist & Druggist," 42 Cannon St., London, E.C.4."

Report on the June Analytical Exercise

THE powder distributed to students on May 25 contained five parts by weight of sodium acetate, four parts of disodium hydrogen phosphate, and one part of sodium bicarbonate. The calculated composition of such a mixture is:—

Na	...	...	...	...	16.4
C ₂ H ₃ O ₂	...	...	...	...	21.7
PO ₄	...	...	...	...	10.6
CO ₃	...	...	...	...	7.1
H	...	...	...	...	0.2
H ₂ O	...	...	...	...	44.0
					100.0

There was also present, as impurity, a trace of chloride.

Samples of the powder were distributed to twenty students, and six reports were sent in for examination. Sodium was detected in every case, and the acidic radicals, present as main constituents, were, with the exception of that of acetic acid, missed in only a single instance. The detection of the acetate was, however, only reported by two students and the same number recognised the trace of chloride as impurity. The abundant evolution of water when the powder was gently heated in a dry tube escaped the observation of one student only.

From the composition of the mixture as given above, it is evident that this analysis was intended primarily as an exercise upon the side by side recognition of acidic radicals. As such, it furnished several analytical problems of a kind which we recommend students to consider carefully and, still more important, to examine practically in the laboratory with suitable mixtures prepared by themselves. As a guide to students we suggest, for example, their examination of the following points, all of which are immediately connected with the present analysis and may serve as representative of the kind of problems which will repay investigation by showing how some of the reactions of certain acidic radicals may be obscured, partially or completely, by the presence of others.

1. On adding silver nitrate to mixed aqueous solutions of sodium phosphate and sodium carbonate, is the precipitate which appears at the outset yellow (silver phosphate) or white (silver carbonate), and what is the effect, if any, on further adding the reagent in excess?

2. On adding ferric chloride (in nearly neutral solution) to mixed aqueous solutions of sodium phosphate and sodium acetate, does precipitation take place, at the outset, of slightly yellowish ferric phosphate and when, if at all, on further addition of the reagent, does the red colour due to ferric acetate appear?

3. On adding magnesium sulphate to mixed aqueous solutions of sodium phosphate and sodium bicarbonate (as a supposed distinguishing test between carbonate and bicarbonate) is any precipitate formed, and, if so, is it due to the phosphate present?

4. On adding calcium chloride to mixed aqueous solutions of sodium acetate, phosphate, and bicarbonate, is a precipitate formed, and, if so, can its behaviour towards acetic acid or towards concentrated solution of ammonium chloride be accepted as evidence in favour of the absence or of the possible presence of a tartrate?

The behaviour towards the same reagents of the separate solutions used in preparing each of the above mixed solutions may also be examined with advantage for purposes of comparison.

PRIZES

The First Prize for the best analysis has been awarded to:—

ARTHUR G. STOCK, 5 Spring Grove, Idle, Bradford.

The Second Prize has been awarded to:—

CYRIL T. HODGSON, Carolgate, Maindy Croft, Low Pentre, Glam.

First Prize.—Any scientific book that is published at a price not greatly exceeding fifteen shillings may be taken as a first prize.

Second Prize.—Any scientific book which is sold for about seven shillings and sixpence may be taken as a second prize.

The students to whom prizes are awarded are requested to write at once to the Publisher, naming the book or books they select.

MARKS AWARDED FOR ANALYSES

A. G. Stock (1st Prize)	89	East Coast	...	79
C. T. Hodgson (2nd Prize)	82	Massa de Jujubis	...	75
Nil Sine Labore	81	Bismuth Sol	...	25

TO CORRESPONDENTS

A. G. STOCK.—Potassium was not present. Probably the cobalt glass you employed was insufficient to cut off completely the sodium flame coloration. Two or more thicknesses of the glass should be used if necessary.

C. T. HODGSON.—There should not have been any precipitate on the addition of ammonium chloride and excess of ammonia as group reagents. Whatever was the nature of the precipitate which you obtained at this stage, you left its composition unascertained. Magnesium should have been tested for in the filtrate from this precipitate, as well as zinc-group and barium-group metals.

NIL SINE LABORE.—You report silver nitrate as producing a white precipitate of silver carbonate when added to a neutral solution of the powder and the same reagent as producing a yellow precipitate of silver phosphate or arsenite when added to a sodium carbonate extract (the latter, by the way, a quite needless solution in the present analysis). These contradictory reports require some explanation. See also No. 1 above. Regarding a much more rapid test for an arsenate than the one you applied, by means of sodium sulphite and hydrogen sulphide, see *C. & D.*, February 13, 1926, p. 225.

EAST COAST.—The odour produced when the powder was heated in a dry tube was due almost entirely to the decomposition of the sodium acetate, and it did not remotely resemble that of "burnt feathers." Compare these two odours side by side and you will doubtless agree. You do not appear to have applied any test for an acetate, and the powder did not contain any trace of a citrate.

MASSA DE JUJUBIS.—Suspecting an acetate, you should have applied the more characteristic and certain cacodyl test rather than rely solely upon the test with ferric chloride. The precipitate which you supposed to prove the presence of a tartrate was no doubt calcium phosphate. See also No. 4 above.

BISMUTH SOL.—Your report that barium chloride gave with a solution of the powder a white precipitate which was insoluble in boiling nitric acid, is only explicable on the supposition that you employed the concentrated acid and that the insoluble matter consisted simply of barium nitrate or chloride. Dilute nitric acid is the appropriate reagent, and in it the precipitate would have dissolved completely. You state that "all the other acids were found to be absent . . . etc." Besides being in the present instance most inaccurate, this mode of reporting does not enable the reader to form a just judgment of the value of your work or to point out where error may have arisen. You should report what tests you apply, what results you observe, and then what conclusions you arrive at.

*** These competitions are now discontinued until October.

ZANZIBAR CLOVES.—Last year the shipments from Zanzibar amounted to 219,217 cwt., valued at Rs.1,32,82,782, against 169,309 cwt. and Rs.1,21,52,211 respectively in 1924. Exports of clove stems during the same two periods amounted to 41,440 cwt., valued at Rs.7,45,512, and 24,531 cwt., valued at Rs.4,83,963 respectively. As regards the destination of the cloves, the bulk went to India, the United States and the United Kingdom, whose shares totalled 97,906 cwt., 49,456 cwt., and 41,966 cwt. respectively. Other countries included: Holland, 8,729 cwt.; Netherland East Indies, 5,422 cwt.; France, 5,054 cwt.; and Germany, 3,157 cwt.

Modern Physico-Chemistry and its Pharmaceutical Applications

By W. A. Whatmough

XXXVII. Heat a Mode of Motion (or Ethereal Dynamics)—V

SCIENTIFIC thought has of recent years become distinctly reconciled to the conception that space consists of a continuous medium, but ether experts provide two diametrically opposed ideas regarding the nature of this continuum. The usual view is (a) that this universal medium is so nebulous (or immaterial, as the term ethereal signifies) that it is frictionless, i.e., it does not offer any

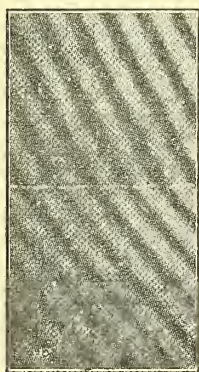


Fig. 47

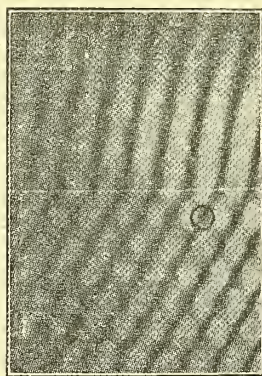


Fig. 48

Fig. 47.—Refraction of a pulsating flow of water which occurs when a change in velocity is produced in consequence of alteration in depth of the test tank. The dark lines are due to the interference of light waves (ethereal pulses) reflected from the curved surface of the water in its different phases of wave motion. The change in direction is exceedingly sharp. (Ripple Photograph by Dr. A. H. Davis at the National Physical Laboratory reproduced from "Nature," September 19, 1925, p. 427.)

Fig. 48.—Ripple photograph shows interference effects of refracted and reflected waves (one produced as shown in Fig. 46, and the other from the sides of the tank). (Photo by Dr. A. H. Davis.)

material resistance to the passage of particulate matter relative thereto. A contrary concept considers (b) that the very continuity of the "elastic" space binding matter together (and transmitting its movements) necessarily makes it thousands or even millions of times more compact (or denser) than the material portion of the universe. Such conflicting concepts are the inevitable outcome of unwarrantable assumptions. Thus it is perpetual molecular motion which leads to a frictionless ether (a), whilst the undulatory theory of light calls for perfectly elastic ether (b). It follows that ether of type (a) can flow freely (or move relatively to matter),

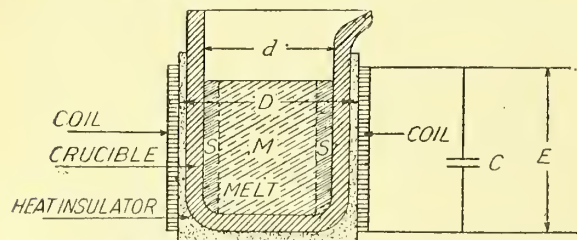


Fig. 49.—Diagrammatic representation of arrangements for Inductive Heating by ethereal pulsations (electromagnetic energy). The difference of the potential (E) represents the applied electromotive force, whilst the condenser (C) is to store energy at each reversal of the flow of electricity. (Diagram by E. F. Northrup.)

without any need for expenditure of energy. The other alternative is that matter is permanently fixed in space of type (b) and cannot move at all unless (as has been seriously suggested to the author) matter moves in immovable space by dissolution and re-formation of hypothetical constituent units (called "etheroids"). Motion without work and motion of dissolving matter lead to

equally unsatisfactory absurdities, and to escape from such conflicting notions it is necessary to go back to first principles. The ease with which mercury fills into a vacuum (Fig. 46, Article XXXVI) definitely favours the concept of a free-flowing or fluid ether (if it is admitted that an ether exists), but its displacement must involve the doing of work, however small this may be (Article III). The suggestion in Article V that ether and matter are two different states of this self-same medium solves the problems involved in the fluid flow of ether. Therein it is shown that moving this "medium" around constitutes a circulation (or flux) of energy, which thereby not only sets up "potential differences," but also generates heat when flow of ether is repeatedly reversed past matter as in a modern induction furnace (Fig. 3, Article V). That the ether does flow is a matter of daily experience, for, even if it is not the ultimate constituent comprising water, the ethereal medium is certainly its chief component. Though common sense and experimental evidence equally reject the idea of unending motion of molecular (or atomic) matter in space, there is nothing inconsistent in an energy flow consisting of medium and matter moving together at different speeds (when the work done or being done will be a consequence of their relative motion, cf. Article V). Experiment supports the idea that changes in the form of wave motion take place according to the type of flow (Article XXXVI), whether this consists of ether alone or water (i.e., ether containing water molecules). The ripple photographs herewith show beautifully that both bending (refraction) (Fig. 46) and interference (Fig. 47) can occur with pulsating flows of water.

The phenomena connected with the melting of metals by ethereal waves in an induction furnace (Fig. 49)

affords the unusual example of the "stepping up" of frequency of ethereal vibrations, as compared with the otherwise apparently inevitable degradation of "heat" in ordinary furnaces utilising chemical combustion or electrical currents, both of which are forms of chemical reunions of negative electrons with positive ions. [N.B.—Any relative flow of electrons in space constitutes a current of electricity, the effect being the same whether electrons be considered as moving through still ether in a conductor, or whether the ether be regarded as flowing through the conductor past oscillatory electrons.]

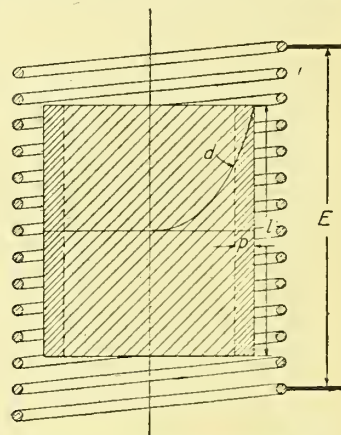


Fig. 50.—Heat Penetration in Inductive Heating. (After E. F. Northrup.)

The principle of the induction furnace depends upon the production of electromagnetic pulses (or waves), which occurs when a current of electricity is stopped or reversed. The connection between pulse production in space and any changing flow of ether (in the conductor of electricity, see note above) is the subject of explanation in Article XXV. The all-important fact is that with each reversal of electrical current an electromagnetic pulse of radiant energy passes into the mass of metal in the interior of the induction furnace, and "heat" is developed. The rate of heating up is in proportion to the frequency of the pulsations, being 100 times as great at 10,000 reversals per second as with like phase frequencies of 100 per second.

There is a peculiarity in the way in which "heat" penetrates into the mass of melting metal. The temperature curve (d) in Fig. 50 shows that this "heat" is not evenly distributed, but that it falls off according to a logarithmic decrement, a point of interest in connection to resistance to the flow of "heat" which will be taken up later.

The Progress of Pharmacy

AND ALLIED SCIENCES

PHARMACY

Tincture of Strophanthus.—S. Gergely ("Gyógyszerészi Folyóirat," June 15, 1926) proposes the following method of preparing tincture of strophanthus: Moisten 100 grams of strophanthus seeds with 335 grams of boiling water and infuse for twenty-four hours. When cool, add 665 grams of alcohol (90 per cent.) and macerate for six days; filter or percolate to obtain 1,000 grams of tincture.

Pancreatin Tooth-paste.—Following a suggestion recently made in a Danish medical journal to the effect that pancreatin should prove a valuable solvent for tartar on the teeth, Ingeborg Dorph ("Tandlaegebladet," January 1926) reports that she has obtained excellent results from the use of the following prescription:—

Calc. carb. præcip.	25 grams
Sapon. dur.	2.5 grams
Ol. menth. pip.	0.5 gram
Pancreatin.	0.5 gram
Glycerin.	q.s. ut fiat pst.

This tooth-paste does not attack the enamel, but readily causes the detachment of the tartar, and apparently prevents its further formation.

Cod-liver Oil Emulsion.—As a result of an exhaustive study of the various methods of preparing emulsions, from the point of view of colloidal chemistry and its applications to this form of presenting medicaments, E. Iselin ("Pharmaceutica Acta Helvetica," April 24, 1926) comes to the conclusion that potassium palmitate is the best emulsifying agent for cod-liver oil. To prepare a 50 per cent. emulsion, 1.5 gram of palmitic acid is melted in a beaker on an asbestos plate, and while warm 8 grams of $N/1$ potassium hydroxide is added, followed by the addition of 20 grams of mucilage of gum acacia and a solution of 0.5 gram of gelatin in 40 grams of water; the whole is heated and well mixed by means of a glass rod. This yields a white homogeneous soap paste which is gradually added to a mixture of: cod-liver oil, 100 grams; oil of cinnamon and oil of clove, aa 4 drops; syrup, 30 grams; tincture of orange peel, 3 grams. The flask containing the yellowish-white emulsion is twice placed in boiling water for a short time, vigorously shaken and finally cooled by immersion in cold water. This method yields a stable, homogeneous white emulsion without entailing prolonged shaking, and in which the taste of the cod-liver oil is very effectively masked.

The Potency of Digitalis Infusions.—M. L. Tainter, of the department of pharmacology, Stanford University School of Medicine ("Journal of the American Pharmaceutical Association," April 1926, p. 255), summarises his observations made during the past three years on the changes in hydrogen ion concentration of digitalis infusions and the bearing of these on their physiological activity. Determinations of the PH of some tinctures are also included. The conclusions arrived at were as follow: infusions of digitalis tend to undergo a spontaneous increase in acidity on standing, whether made with distilled or tap water, or by the methods of the U.S.P. IX or X, and also independently of temperature changes and preservatives. Also, the presence of growing organisms may modify the direction or extent of the PH changes. The loss of potency, as indicated by the official one-hour-frog method, is not prevented or altered by the addition of preservatives such as alcohol 10 per cent. (U.S.P. X), chloroform, thymol, clove or cinnamon oils to saturation.

Deterioration is as rapid in sterile as in contaminated infusions, and seems to be due to the hydrolytic cleavage of the glucosides. The physiological activity of fresh, standing and decomposed infusions is independent of their hydrogen ion concentration. The true acidity of tinctures of digitalis is rather high, being nearly equivalent to that of a $N/10,000$ hydrochloric acid.

Syrup of Grindelia.—Five species of *Grindelia* are indigenous to Brazil, occurring in the region between the Parana and the Rio Grande do Sul. These are *Grindelia discoides* Hook. et Arn.; *G. scorzonifolia* Hook. et Arn.; *G. pectinata* Baker; *G. puberula* Hook. et Arn.; and *G. buphthalmoides* DC., and are extensively used in that country in the treatment of respiratory affections. R. A. Dias da Silva ("Revista Brasileira de Medicina e Pharmacia," February 1926) describes a method of preparing a fluid extract containing the whole of the oleoresin present in the drug and which is miscible with syrup; this process figures in the draft of the proposed Brazilian Pharmacopoeia. 1,000 grams of powdered drug is moistened with alcohol (95 per cent.) and set aside for two hours. The mixture is then transferred to a percolator, and the drug extracted with alcohol (95 per cent.). After removing the alcohol from the percolate by distillation, the residue is dissolved in a solution of 100 grams of sodium bicarbonate in 500 c.c. of water; when effervescence has subsided, sufficient water is added to produce 750 c.c., and the volume of the whole is completed to 1,000 c.c. with alcohol (95 per cent.). This fluid extract represents the whole of the therapeutically active constituents of *Grindelia*, and is miscible with water and syrup. Syrup of Grindelia is obtained by mixing 50 c.c. of this fluid extract with 950 c.c. of syrup.

Oleum Hyoscyami Infusum.—Under this title the Swedish Pharmacopoeia (Xth ed., 1925) includes a preparation obtained by macerating for 12 hours 50 grams of hyoscyamus leaves with a mixture of alcohol (90 per cent.) 100 grams and solution of ammonia 1 gram, then adding 250 grams of olive oil, and heating the mixture on the water bath to remove the alcohol and ammonia. The oil is then pressed while warm and filtered. S. Hasselskog ("Farmaceutisk Revy," April 3 and 10, 1926) has investigated various methods of assaying this preparation for its content of alkaloids, and recommends the following process: 50 grams of hyoscyamus oil is dissolved in 75 grams of chloroform, and the solution is shaken with 20 c.c. of solution of chlorine (1 per cent.) containing 1 per cent. of ammonium chloride. After separation of the aqueous layer, 10 c.c. of the alkaloidal solution is pipetted off, and replaced by 10 c.c. of hydrochloric acid containing ammonium chloride. After renewed shaking and separation another portion of 10 c.c. of the alkaloidal solution is pipetted off; the two alkaloidal portions are now mixed in a separator and rendered strongly alkaline by the addition of solution of ammonia, whereupon the mixture is extracted with three portions each of 10 c.c. of chloroform. The collected chloroformic solutions are evaporated to dryness on a water bath, the residue twice taken up with 5 c.c. of chloroform, and each time evaporated to dryness. The residue is dissolved in 2 c.c. of alcohol, an excess of $N/50$ hydrochloric acid is added and titrated with $N/50$ sodium hydroxide. The resultant value must be multiplied by $4/3$; 1 c.c. of $N/50$ hydrochloric acid corresponds to 0.00578 gram of atropine.

The Progress of Pharmacy and Allied Sciences

PHARMACEUTICAL CHEMISTRY

Novocaine and Cocaine Test.—D. Gerhardt ("Pharmaceutisch Weekblad," May 1, 1926) found that on adding 2 drops of solution of ammonia to a solution of 0.02 gram of cocaine hydrochloride in 4 c.c. of water an abundant precipitate was thrown down, whereas with novocaine hydrochloride the liquid remains clear. To determine both substances in a mixture, the author dissolves 0.2 gram of the mixture in 40 c.c. of water, and adds 4 drops of solution of ammonia, to precipitate the cocaine, which is then determined by the usual tests.

Adulteration of Saffron.—Pierlot, in a paper on this question ("Annales des Falsifications," 1925, 18, 464) states that the presence of 3 to 5 per cent. of stamens in saffron may be regarded as normal. Samples he has examined have been found to be mixed with the petals of *Cynara cardunculus* coloured red with a dye, and loaded with potassium nitrate and sodium glyceroborate. The presence of this substance is shown by the red colour imparted to water, and by the shape of the petals when they expand in water. Pierlot advocates the determination of nitrogen as a useful method for the determination of purity. Nitric nitrogen must be eliminated by means of ferric chloride and hydrochloric acid (Comp., C. & D., 1923, II, p. 895).

Acetannin.—O. Fernandez and Y. M. Fernandez ("El Monitor de la Farmacia y de la Terapéutica," April 20, 1926) describe the following method for the preparation of diacetyl-tannin: 50 grams of tannic acid is mixed with 200 grams of acetic anhydride and four or five drops of sulphuric acid are added to the mixture. The latter is cooled by placing the flask in water, whereupon the contents are poured into an excess of water, heating the whole to 60° C. for 30 minutes, in order to hydrate the excess of acetic anhydride. The precipitate is then collected, washed with water until the latter yields no reaction with the tests for tannic acid and for acetic acid, and then dried in an exsiccator over sulphuric acid. The yield amounts to 70-72 grams, approximately 85 per cent. of the theoretic amount.

Guarana Assay.—J. von. Mikó and S. von Mikó ("Pharmazeutische Zentralhalle," March 25, 1925) have utilised the fact that there is a definite relationship between the colour of amalinic acid and the caffeine content upon which to base a method for the assay of guarana. They have established that the orange-red colour of amalinic acid, produced by the following test, is characteristic of the presence of 0.003 gram of caffeine, and may be employed for the quantitative determination of the latter: 0.1 gram of powdered guarana, 10 c.c. of chloroform, and 5 drops of *N*/5 solution of ammonia are shaken for one minute in a test tube; the filtrate is evaporated to dryness, and 3 c.c. of hydrogen peroxide solution (3 per cent.) and 5 drops of *N*/5 hydrochloric acid added to the residue. The mixture is evaporated to dryness on a water bath and yields a residue exhibiting a pronounced orange-red colour, which changes to purple-red on the addition of one drop of solution of ammonia. The production of this colour shows that the sample of guarana examined contains at least 4 per cent. of caffeine.

Ergot Assay.—Now that the constituents of ergot are known, and can be determined by specific reactions, A. Tschirch ("Pharmaceutica Acta Helvetica," May 22, 1926) proposes for inclusion in the pharmacopœia the following tests for the recognition and approximate assay of this drug: 1 gram of powdered ergot is mixed with 20 c.c. of ether, and 10 drops of solution of ammonia as well as 20 c.c. of water are added; the aqueous layer assumes a red colour (sclererythrin). The mixture is repeatedly shaken, and after standing for two hours the supernatant ethereal layer is removed and evaporated to dryness, the residue is dissolved in glacial acetic acid, and the solution filtered; concentrated sulphuric acid containing ferric chloride is carefully added to the filtrate, whereupon a violet-blue zone develops at the junction of the two layers of liquid (ergotamine), while the acetic acid layer exhibits a green fluorescence (ergosterin). If traces of proteinogenic amines are present,

a faintly yellow coloration is apparent as a ring at the junction of the two liquids. This test is sufficiently reliable to demonstrate the presence of a content of at least 0.2 in 1,000 of ergotamine.

Strophanthin a Mixture.—W. A. Jacobs and A. Hoffmann ("Journal of Biological Chemistry," LXVII, No. 3, p. 609) report that crystalline K-strophanthin from *Kombé strophanthus* seeds of commerce consists in reality of a mixture of chloroform-soluble and water-soluble portions. The chloroform-soluble product is identical with cymar in of Canadian hemp, which gives the deep-blue colour of the Keller-Kiliani reaction for digitoxose. The water-soluble portion of crystalline K-strophanthin proved to be still a mixture of substances, with a practically negative Keller-Kiliani test (green followed by purple, but the colour tones of the latter not clear). The name K-strophanthin- β is proposed for the water-soluble glucoside which was isolated, and melts at 150-151° C. with effervescence. The experimental results make it obvious that extracts of *Strophanthus Kombé* seeds contain a mixture of strophanthidin glucosides, and that in previous chemical or pharmacological examinations of strophanthins in no case is there any certainty that a homogeneous substance has been employed. Cymar in and K-strophanthin- β are the only definite strophanthidin glucosides known at present. The authors give reasons for the conclusion that the hydroxyl in strophanthidin is presumably γ to the aldehyde group of cymarose, and that here is the point of glucosidic union with that sugar.

Assay of Mercuric Oxide in Ointments.—E. Rupp, K. Müller and O. Lemke ("Apotheker-Zeitung," No. 25, 1926) describe a method for the assay of yellow and red mercuric oxide in ointments, based on the formation of a complex soluble compound of mercury and sodium thiosulphate. About 1 to 2 grams of red or yellow mercuric oxide ointment is accurately weighed on a piece of parchment paper, which is then transferred to a flask provided with a glass stopper, and dissolved in about 15 c.c. of petroleum benzene. After adding 10 c.c. of water and 2 to 2.5 grams of sodium thiosulphate the mixture is set aside, with occasional shaking, until the mercuric oxide has disappeared, which usually takes 10 to 15 minutes. After rinsing the neck and wall of the flask with about 25 c.c. of water, and adding 2 to 3 drops of methyl-red solution, titration is carried out with *N*/10 hydrochloric acid, frequently shaking the liquid, until it assumes a pink colour. 1 c.c. *N*/10 hydrochloric acid corresponds to 0.01083 gram of mercuric oxide, hence 1 gram of a 10 per cent. ointment should require 9.25 c.c. of *N*/10 hydrochloric acid. This method cannot be used when the ointment base consists of a fat, or lanoline, or when an oil has been used to triturate the mercuric oxide. It is, however, capable of application for assaying the content of white precipitate in an ointment prepared with vaseline: 1 c.c. of *N*/10 hydrochloric acid = 0.0125 gram of HgNH_2Cl .

Determination of Aldehyde Contaminant in Ether.—E. P. Phelps and A. W. Rowe ("Journal of the American Chemical Society," April, 1926, p. 1,049) use Schiff's reagent as a means of estimating the aldehyde content of anæsthetic ether, aldehyde being the other principal contaminant of ether besides peroxide. The Schiff's reagent is prepared by the method of François, whereby 30 c.c. of 0.1 per cent. aqueous fuchsin solution is mixed with 200 c.c. of saturated solution of sulphur dioxide. After thoroughly shaking, 3 c.c. of concentrated sulphuric acid is added. The solution is filtered after 24 hours if a precipitate is present. Aldehyde free alcohol is obtained by purification with *m*-phenylenediamine. Pure acetaldehyde as a standard was obtained by depolymerisation of paraldehyde with dilute sulphuric acid by distilling through a 90-cm. Hempel fractionating column. A Duboscq colorimeter with 10 cm. cups was used for the majority of the colour comparisons, 10 c.c. of aldehyde-free alcohol being added, followed by 1 c.c. of aldehyde in ether and 4 c.c. of pure ether to one cup, and 5 c.c. of the ether sample under test in the other. Schiff's reagent (5 c.c.)

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is added to each of the two containers simultaneously and the colours compared after 15 minutes' standing. If the colours do not nearly match the procedure must be repeated with more or less aldehyde solution in ether until the colours are alike, or nearly so, because the colour production is not proportional to the concentration of aldehyde. The weight of aldehyde present in the standard represents that in 5 c.c. of the ether sample. The authors state that the minimum amount that can be estimated is of the order of 0.003 per cent.

Japanese Opium.—After reviewing the history of opium cultivation in Japan, E. Machiguchi ("Yakugakuzasshi," March 1926) describes the results of his investigations in separating the total alkaloids, comparing these results with those found for opium grown in other countries. Japanese opium yields only a very small proportion of ash, but is rich in water-soluble constituents (65-72 per cent.). With regard to the five chief alkaloids, there is in general no appreciable difference in content between Japanese and foreign opium; on the other hand the former is richer in laudanine, laudanosine and lanthopine, but is poorer in cryptopine. The author's results of comparative analyses of Japanese and foreign opium, and also of Japanese poppy capsules, are summarised in the following table:—

Alkaloids	Foreign opium	Japanese opium	Japanese poppy capsules
	%	%	%
Morphine ..	4-22	5-22	0.03-0.05
Narcotine ..	4-8	4-7	0.005
Codaine ..	0.4-1.0	0.4-1.0	0.006
Thebaine ..	0.4-0.9	0.4-0.8	0.002
Papaverine ..	0.3-0.9	0.4-0.7	0.010
Narceine ..	0.1-0.6	0.2-0.5	0.001
Pseudomorphine ..	ca. 0.020	ca. 0.040	—
Meconidine ..	" 0.300	" 0.250	ca. 0.003
Codamine ..	" 0.002	" 0.003	—
Laudanine ..	" 0.010	" 0.025	ca. (crude) 0.015
Laudanidine (?) ..	" —	" 0.020	—
Lanthopine ..	" 0.006	" 0.040	—
Laudanosine ..	" 0.0008	" 0.020	ca. 0.001
Protopine ..	" 0.003	" 0.003	" 0.0003
Cryptopine ..	" 0.080	" 0.050	—
Gnoscopine ..	—	" 0.003	—
Oxynarcotine ..	—	" 0.010	—
Hydrocotarnino ..	—	" 0.030	ca. 0.002
Tritopine ..	ca. 0.0015	" 0.0009	—
		(?)	

A crystalline substance extracted from Japanese opium, also found in Japanese poppy capsules, possessing the same melting point as porphyroxin and otherwise resembling the latter in its properties, proved on examination to consist of a mixture of codamine, crude laudanine and meconidine.

Crystalline Insulin.—J. J. Abel ("Proceedings of the National Academy of Sciences of the U.S.A.," February 1926) has published a report of the progress made towards the solution of the problem of the isolation of insulin. One gram of the so-called fraction IV, an insulin fraction with a rabbit unitage of 40 or more units to the milligram, is dissolved in a little more than the required volume of *N*/6 acetic acid, enough water is added to bring the volume up to 60 c.c., and the contaminating substances, together with some insulin, are then precipitated by the addition of an acidulated solution of brucine containing 6 grams of brucine in 95 c.c. of *N*/6 acetic acid. The resulting clear supernatant fluid, which contains nearly pure insulin, is separated from the precipitate by centrifugalisation. Insulin remaining in the precipitate may be removed by dissolving in *N*/6 acetic acid and precipitating with the brucine solution as before. The clear, colourless centrifugate containing the insulin is then precipitated with *N*/6 pyridine and the precipitate and fluid are immediately centrifuged. The precipitate which settles out is largely crystalline in character; the sides of the tube are found to be coated with glistening, highly refractive crystals, and the topmost layer of the precipitate consists of similar crystals. This crystalline insulin is dissolved in *M*/15 disodium hydrogen phosphate, and to the clear

solution *N*/6 acetic acid is added drop by drop with vigorous shaking, in order that any insulin thrown out will at once pass into solution again, and this addition of the acid is continued until a slight amount of turbidity persists permanently. The flask is then carefully set aside overnight. On the following morning the bottom of the flask, as well as the sides, are coated with an abundance of colourless, highly refractive crystals. The crystals melt sharply at 233° C., with slight browning occurring at 215° C. Pure insulin gives a beautiful biuret reaction, passing from a clear pink to a fine purple on further addition of copper sulphate to the alkaline solution. Millon's reaction is unequivocal and positive. The Pauly and the ninhydrin reactions are also positive. This pure insulin is very sensitive to alkali, as shown by the fact that boiling for 15 minutes with *N*/10 sodium carbonate deprives it entirely of its hypoglycæmic activity. The exact dosage of the crystalline material has not yet been established, but for the present it has been found that amounts as small as 1/100 milligram per kilo rabbit lowered the blood sugar to about the convulsive level—0.045 per cent. The chemical structure of the compound is under investigation.

Santonin Assay.—To determine the content of santonin in various varieties of *Artemisia*, particularly when the entire plant is utilised for the extraction of this active principle, H. Vogther ("Archiv der Pharmazie," April 1926) has found that the following modification of Fromme's method yields satisfactory results: 10 grams of the finely-powdered drug is moistened with 50 c.c. of hot water and 10 c.c. (or more) of hydrochloric acid (25 per cent.) and maintained at a temperature of 80°—100° for a few minutes. The resins collect on the surface, and when the whole has become cold, and not before, they are removed and powdered in a mortar. The powder is transferred to a separator by washing out the mortar with the above acidified water, followed by two washings with 20 c.c. of water. Three portions of 50 c.c. of chloroform are added to the contents of the separator, shaking the whole for two minutes each time; each portion of chloroform being first used to rinse out the mortar. The collected chloroformic solution is vigorously shaken for two minutes with 50 c.c. of solution of sodium hydroxide (1.5 per cent.), and after separation of the two liquids has taken place, the aqueous layer is removed and the chloroformic solution is again shaken with 50 c.c. of water. The chloroformic solution is filtered, and if necessary rendered clear by the addition of a little sodium sulphate, whereupon the chloroform is distilled off until about 10 c.c. remains. This residue is then mixed with 100 c.c. of solution of barium hydroxide (5 per cent.), and the remainder of the chloroform removed by slowly heating on a water bath, whereby the resin collects on the surface of the liquid. When this point is reached more heat is applied, until the odour of chloroform is no longer perceptible. The liquid is now filtered through a smooth moistened filter of 6 cm. diameter into a 200 c.c. flask, the filter and the flask are twice washed with 10 c.c. of hot water, and after the addition of 5 c.c. of hydrochloric acid (25 per cent.) the flask is heated for a few minutes in a boiling water bath. When lukewarm the contents are transferred to a separator, and the flask is washed with three portions of 20 c.c. of chloroform, each portion being then added to the contents of the separator and the latter vigorously shaken for two minutes. The clear chloroformic layer is filtered through a smooth double filter into a 100 c.c. flask, the flask as well as a filter of 6 cm. diameter being previously weighed. The chloroform is entirely removed by heating on a water bath, the residue is dissolved in exactly 7.5 grams of absolute alcohol by the aid of gentle heat, whereupon exactly 42.5 grams of hot water is added. The cloudy liquid is set aside for exactly 24 hours to crystallise, and filtered through the previously weighed filter. The flask and filter are washed with two portions of 10 c.c. of a mixture of 3 grams of absolute alcohol and 17 grams of water. To the ascertained weight of the santonin thus obtained, 0.034 gram must be added, representing the amount of santonin retained in solution.

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Piperonal in Vanilla Extract.—G. B. Gnadinger ("Industrial and Engineering Chemistry," Vol. 18, No. 6, p. 588) states that the use of piperonal (heliotropine) in vanilla extract is largely due to the belief that it is a natural constituent of vanilla pods. Though piperonal is frequently mentioned in literature as a constituent of vanilla, it has not been isolated from any variety of beans in any quantity. As a result of a new investigation it was found that vanillons and Tahiti vanilla give qualitative tests for piperonal, and would thus appear to contain it in a small amount. This is in accord with the similarity in their chemical composition, but as vanillons and Tahiti vanilla beans are inferior in flavour and differ markedly from other varieties, it is questionable whether their use is permissible in the United States unless labelled to indicate the variety. The methods used for testing vanilla extracts consisted in the application of both phloroglucinol and piperonal tests. The phloroglucinol test was conducted as follows:—

The extract (50 c.c.) was de-alcoholised by spontaneous evaporation (assisted by fan) to 40 c.c., and transferred with water to a separatory funnel. The solution was extracted with 50 c.c. of ether and the ether washed with three successive portions (15 c.c. each) of 2 per cent. sodium hydroxide solution, and once with distilled water. After removal of the ether by spontaneous evaporation, a few minute crystals of phloroglucinol were added, followed by a few drops of concentrated hydrochloric acid. A deep red colour, similar to that produced by vanillin, is formed if piperonal is present.

Tests on Mexican, Bourbon, South American and Java vanilla extracts yielded negative results to this test. Tahiti extracts gave doubtful reactions, but extract of vanillons provided a strong colour. Labat's gallic acid test was found to be far more selective than the phloroglucinol test. This was applied as follows:—

Vanilla extract (100 c.c.) was de-alcoholised and extracted as for the phloroglucinol test. The ether solution was shaken with 30 c.c. of 15 per cent. solution of sodium bisulphite and allowed to stand for two hours with agitation at frequent intervals. The bisulphite solution was separated and sodium carbonate added until distinctly alkaline to litmus. This alkaline solution was next extracted with ether (25 c.c.) and the ether solution of aldehydes evaporated spontaneously. The residue was dissolved in 1 c.c. of alcohol and 0.1 c.c. of this alcoholic solution heated for two minutes in a steam bath with 0.1 c.c. of 20 per cent. alcoholic gallic acid solution and 2 c.c. of concentrated sulphuric acid. The reaction is much more sensitive when the gallic acid solution is added to the sulphuric acid before the solution under test. An emerald to blue colour develops if piperonal is present.

Mexican, Bourbon, South American and Java extracts gave negative gallic acid reactions for piperonal. Tahiti extracts gave strongly positive tests, whilst with vanillon extracts the colour reactions were deeper still. A strong emerald colour was given when 0.001 gram of piperonal was added to 100 c.c. of Bourbon vanilla extract. An attempt to isolate piperonal from vanillon extract gave 0.8 gram of mixed aldehydes from four kilograms of finely-chopped material, and anisaldehyde constituted the greater portion thereof. Piperonal could not be isolated from these mixed aldehydes, although apparently a small amount was present.

Aloes Assay.—The impossibility of extracting the total content of aloins from aloes for quantitative estimation induced E. Léger ("Journal de Pharmacie et de Chimie," April 1, 1926) to elaborate a method of assay based on the determination of the total aloins in the form of their chlorine derivatives. Introduce 2 grams of powdered aloes in a conical flask of 50 c.c. capacity, and add 10 c.c. of hydrochloric acid. When complete solution has taken place, usually at the end of two hours, 1 gram of powdered potassium chlorate is gradually added in portions of 0.1 gram, the flask being placed in cold water during this operation. On the following day 20 c.c. of water is added to the contents of the flask; the precipitate is broken up, and the whole well mixed with the aid of a glass rod, and then transferred to a smooth filter 9 cm. in diameter and filtered into a

graduated cylinder of 125 c.c. capacity. The precipitate is washed with sufficient water to produce a total of 70 to 75 c.c. of liquid. The filter with the precipitate is dried, first with filter paper, and then at a temperature of 30° to 35°. The dried precipitate is then transferred to a 50 c.c. flask; the filter, to which some of the precipitate still adheres, is rolled to form a ball and placed in a funnel inserted in the neck of the flask. Pour 15 c.c. of boiling alcohol (80 per cent.) on to the ball of filter paper in the funnel, and express the alcohol by pressing the ball between the thumb and forefinger. The flask is then placed on a water bath to effect solution of the chlorinated derivatives; with those varieties of aloes which contain isobarbaloin (Barbados and Curaçao) almost complete solution is obtained, but with other varieties a portion remains insoluble, consisting of crude tetrachloraloesol. The liquid is filtered whilst warm into a conical flask of 50 c.c. capacity and the precipitate on the filter is washed with hot alcohol (80 per cent.). The conical flask now contains a solution of the chlorinated derivatives, and after removing the alcohol by distillation, yields a tarry mass covered by 2 to 3 c.c. of aqueous liquid. The latter is transferred to a small porcelain capsule and evaporated on a water bath to the consistency of an extract. This residue, amounting to a few centigrams, is dissolved in three portions of 10 c.c. of a saturated solution of chlorinated aloins in alcohol (80 per cent.), each portion being added to the tarry residue in the conical flask, which is then placed in water at 70° to 80° until complete solution of this residue is effected. When cool, crystallisation is provoked by the addition of a few particles of chlorinated aloins, and after standing for 48 hours, the crystals which have formed are collected on a double filter of 9 cm. diameter moistened with alcohol (80 per cent.), and washed with a saturated solution of chlorinated aloins. The two filters are separated and allowed to dry at ordinary temperature until constant weight; this usually takes two days. The amount of chlorinated aloins is now determined, using the outside filter as a tare. Ten varieties of aloes assayed by this method yielded the following percentages of chlorinated aloins:—Cape aloes, 20.25, 20.70, 21.25; Uganda (crown aloes), 17.6, 18.1; Uganda in flat pieces, 16.25; Socotrine, 22.25; Pietermaritzburg (from *Aloes platylepis*), 11.25; Jafferabad, 24.25, 24.7; Indian, 20.85; Curaçao (hepatic), 32.35, 33.5; Curaçao (bright), 31.15; Barbados, 34.4. It will be seen that the last three varieties of aloes yield the highest amounts of chlorinated aloins, showing that they also possess the highest content of aloins. As a standard, Léger proposes that Cape aloes and similar varieties should be required to yield 17 to 20 per cent., and Curaçao and Barbados aloes from 31 to 34 per cent., of chlorinated aloins.

Preparation of Thyroxin.—C. R. Harington, in the "Biochemical Journal" (Vol. XX, No. 2, p. 293), describes an important new method (using dilute solution of barium hydroxide) for the extraction and isolation of thyroxin. This gives a yield of about 0.12 per cent. of the dry thyroid gland used compared with 0.0011 per cent. obtained by Kendall (who used sodium hydroxide). For the isolation of thyroxin, 500 grams of desiccated thyroid gland is boiled under a reflux condenser for 5 to 6 hours with 5,000 c.c. of 10 per cent. solution of crystalline barium hydroxide. After standing overnight the product was filtered through large Buchner funnels (the heavy dark precipitate being worked up subsequently). The clear yellow filtrate is acidified with hydrochloric acid until barely acid to Congo red. The light-coloured flocculent precipitate is allowed to settle for some hours. After separation by decantation and filtration, it is washed on the filter, the washings being rejected. The precipitate is next dissolved in 250 c.c. of water with the aid of ammonia and crystalline barium hydroxide added (to make a concentration of 40 per cent. thereof). After boiling to drive off the excess of ammonia the solution is heated for 18 hours under a reflux condenser, the temperature not being allowed to exceed 100° C., shorter periods not being successful. Thereafter

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the solution is filtered hot and the precipitate washed on the Buchner funnel, with a little hot water (the filtrate is free from thyroxin, but apparently contains some tryptophan). The washed precipitate is ground up and suspended in 250 c.c. of solution of sodium hydroxide (1 per cent.), boiled, and whilst boiling treated with a strong solution of sodium sulphate in slight excess, the boiling being continued for a few minutes. The solution is then filtered from the barium sulphate, and the filtrate brought to the boil, when it is acidified with sulphuric acid (50 per cent.) until just acid to Congo red. On continuing to boil for a minute or two the precipitate becomes heavy and granular, when the solution is cooled. The precipitate is filtered off, dissolved in 20 c.c. of *N*/sodium hydroxide, and alcohol added to about 80 per cent. concentration. The solution is filtered from a small amount of tar, brought to the boil and treated with 10 c.c. of 33 per cent. acetic acid, the thyroxin separating in a partially crystalline condition (yield 0.4 gram = 0.08 per cent.). The original dark heavy precipitate is worked up by grinding together precipitates representing 2,000 grams of thyroid gland and boiling them with 2,000 c.c. of 2 per cent. sodium hydroxide, afterwards adding a slight excess of sodium sulphate to the boiling solution. The filtered solution is acidified with hydrochloric acid, and the precipitate treated precisely as above (yield 0.9 grams = 0.45 per cent., making a total yield of 0.125 per cent. on desiccated gland). The crude thyroxin may be purified by repeated solution in alkaline alcohol and reprecipitation with acetic acid, but it obstinately retains coloured impurities. Final purification is best effected (with slight loss) by making use of the insolubility of the sodium salt as already observed by Kendall. The crude material after one crystallisation as above is dissolved in boiling sodium carbonate solution (0.5 per cent.), each gram requiring about 75 c.c. On cooling a heavy white microcrystalline precipitate of the sodium salt separates out which, after standing overnight in the ice-chest, is centrifuged, dissolved in 80 to 50 per cent. alcohol, with the aid of a little sodium hydroxide, and the boiling solution treated with 33 per cent. acetic acid in excess. The thyroxine obtained is perfectly white, and crystallises in rosettes and sheaves of fine needles, darkening at 220° C., and melting with decomposition and evolution of iodine at 231° to 233° C. Its composition corresponds to $C_{13}H_{11}O_5NI_4$ (as compared with Kendall's $C_{11}H_9O_5NI_3$). Physiological tests gave a reaction typical of those described by American investigators for thyroxin.

BACTERIOLOGY

Protonta is the name suggested by R. R. Gates ("Nature," May 15, 1926) for the ultramicroscopic organisms of filterable viruses which have gained recent prominence as the cause of bovine pleuro-pneumonia and cancer. These virus diseases, which are parasitic in animals and plants, show that a world of organisms exist which are neither plants, animals or cells, and approach nearer to an inorganic substance than to an organism such as a bacterium.

Failure of Bactericidal Action.—G. T. Morgan, E. A. Cooper, and A. E. Rawson have continued their researches on the bactericidal activity of the *cyclo*-telluro-pentanediones (cf. *C. & D.*, 1924, II, p. 914) and investigated the cause of the loss of germicidal power when added to serum ("Journal of the Society of Chemical Industry," April 23, 1926). In the course of experiments with cholesterol it was attempted to emulsify this by means of oleic acid, but it was found that small amounts of oleic acid brought about a very serious collapse in germicidal activity of the organic tellurium compound. Fat is usually present in serum to the extent of 0.1 per cent., and fatty acids may be present, usually in slightly smaller amounts, e.g., 0.075 per cent. Olive oil and oleic acid were added to broth in these proportions, the following results being obtained for germicidal power of 4-ethyl *cyclo*-telluro-pentanedione: Broth (control), 1 in 20,000,000; broth + olive oil, 1 in 1,000,000; broth + oleic acid >. 1 in 1,000,000; broth + lecithin, 1 in 200,000; broth + olive oil and oleic acid,

1 in 50,000; serum, 1 in 50,000. It would thus appear that traces of lipin, fat and fatty acid are responsible for the failure of *cyclo*-telluro-pentanediones as germicides in serum.

BOTANY

Wound Healing in Trees.—T. Swarbrick ("Journal of Pomology and Horticultural Science," March, 1926) finds that the plugging of vessels and tracheids of the wood with "wound gum" (secreted by neighbouring cells containing starch) is a much more rapid means of wound healing in trees than the inward growth of callus. It was found that the entry of disease organisms is completely prevented by such blocking when wounds are made in May to August, whilst from November to April these scarcely close at all. Partial blocking occurs in September and October. The data would appear to be of first-class importance as regards pruning operations in forestry and gardening.

Fertilisation has been followed in detail in the Australian Cycad *Bowenia* by Professor A. A. Lawson, of Sydney University ("Transactions of the Royal Society of Edinburgh," Vol. 54, II, No. 6). The opening for fruit-growing of the district to which this plant is indigenous permitted fortnightly supplies of cones from this hitherto somewhat inaccessible plant. In consequence the process of fertilisation has been followed closely and the cytology of the changes in the reproductive organs carefully worked out. Multinucleated massive sperms have been observed moving in the archegonial chamber, each having thousands of cilia arranged in a spiral band. The dilated neck of the archegonium is forced apart by the entrance of a sperm and closes behind like a "swinging gate." The figures of the nuclear mitoses suggests that paternal and maternal chromosomes retain their individuality when the new egg-cell divides.

AGRICULTURAL CHEMISTRY

Soil Bacteria.—The life cycle of the nodule organism *Bacillus radicicola*, Beij., has been followed by H. G. Thornton and N. Gangulee ("Proceedings of the Royal Society," No. B. 699, p. 427), who find a regular succession of unbanded rods, cocci, and banded rods successively predominating in the soil. Increase in percentage of cocci was associated with increased numbers of bacteria and of motile forms. The spread of the organism is about one inch in twenty-four hours. Inoculation of the soil with a bacterial suspension in milk containing 0.1 per cent. of di-acid calcium phosphate resulted in greater spreading of the bacteria than with milk alone. Experiments with lucerne also suggested that phosphate caused additional nodule formation.

ANALYTICAL CHEMISTRY

Analysis of Acetic Anhydride.—At the April meeting of the Society of Public Analysts, H. Droop Richmond and J. A. Eggleston reported that by adding 2 c.c. of acetic anhydride to 200 c.c. of a mixture of 94 parts of toluene and 6 parts of aniline and measuring the rise of temperature produced in the reaction, a determination of the strength of the acetic anhydride can be made with an accuracy comparable with that of the method of Menschutkin and Wasilieff. It is necessary in very accurate work to make a correction for the heat evolved in the formation of aniline acetate, but a very close approximation can be obtained by multiplying the observed rise of temperature by a factor.

Starch Solution for Iodometry.—C. L. Alsberg, E. P. Griffing and J. Field ("Journal of the American Chemical Society," May 1926, p. 1299) state that water-clear aqueous solutions of starch, which keep for many months, may be made from starch that has been ground in a pebble mill. This grinding of dry starch is done in an ordinary pebble mill until the microscope shows that most of the starch granules are cracked or frayed. Potato starch required 70 hours, and wheat starch 122 hours to effect this. Such ground starch mounted in glycerin or cedar oil no longer exhibits a dark cross under

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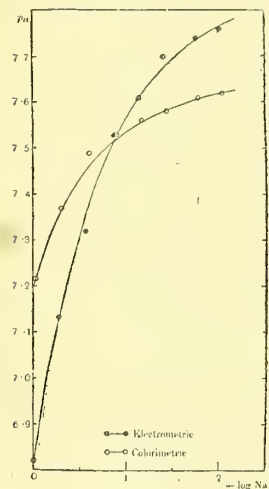
the polarising microscope and it disperses largely in cold water. To prepare starch solution about 2 per cent. of the ground starch is sifted slowly into distilled water, agitated by an electrical stirrer. After one hour's stirring the liquid is centrifuged for half to one hour at 2,000 r.p.m. The supernatant starch solution is decanted and stored under toluene. Wheat starch yields a clear solution, but the solution from potato starch is slightly opalescent.

Test for Potassium and Ammonium.—According to T. Gaspar y Arnal ("El Monitor de la Farmacia y de la Terapéutica," April 20, 1926), calcium-sodium ferrocyanide provides an extremely sensitive test for the recognition of potassium and ammonium ions. The reagent consists of:

Sodium ferrocyanide	...	...	70.44 grams
Calcium chloride	...	...	34.07 grams
Distilled water	...	...	950 c.c.
Alcohol (96 per cent.)	...	...	800 c.c.

The test may be applied in two ways: Introduce 2 or 3 c.c. of the reagent in a test tube and layer over this carefully a small amount of the solution to be tested; if potassium or ammonium is present, a white precipitate gradually forms. Or, the solution to be tested is mixed with an equal volume of alcohol, the reagent is added and the mixture shaken. In the presence of certain potassium salts, particularly potassium sulphate, a considerable time elapses before the appearance of the precipitate.

Discrepancy between Colorimetric and Electrometric pH Determinations due to "salt error" has been investigated in the case of phenol red by E. H. Lepper and C. J. Martin ("Biochemical Journal," Vol. XX, No. 1, p. 45). The graphs reproduced herewith show the effect of sodium chloride on the hydrogen ion concentration of a buffer solution containing sodium phosphates (0.0044 M) when estimated electrometrically and colorimetrically (with phenol red). Other data are given for plain dilution with water and varying CO_2 concentration. Unfortunately, these corrections for charging saline content with phosphate or carbonate buffers are only valid for phenol red, and are accurate for the buffer concentrations stated; hence they cannot be applied to other indicators. The author's observations showed that the fall in pH produced by a given concentration of cations depends upon the nature of the buffer, while the quantitative relationship between the electrolyte added and the concentration of the buffer



salt also influences the result. Why the discrepancy between the colorimetric and electrometric values should be greater the weaker the buffer solution, is not clear, for the concentration of the indicator remains constant throughout.

Arsenic Trioxide and its Allotropic Forms.—E. R. Rushton and F. Daniels ("Journal of the American Chemical Society," vol. 48, No. 2, p. 384), from measurements of the vapour pressure of arsenic trioxide (liquid and octahedral) at temperatures up to 500° C., find it possible to draw conclusions regarding the allotropic modifications of arsenic trioxide. Arsenic trioxide in the gas phase exists as As_2O_3 (up to 760° C.), and when the vapour condenses at temperatures below 275° C. (the melting point of the octahedral form) a rapidly growing octahedral variety is produced in preference to the monoclinic (m.p. 315° C.), although the latter is more stable. The liquid phase is produced when the vapour condenses above 315° C., and there is a chance

of obtaining monoclinic crystals between 275° and 315° C. However, the vitreous variety may form in preference to the monoclinic, or even to the octahedral form. Although the monoclinic variety is more stable than either octahedral or vitreous arsenic over the temperature range investigated the transition is so slow that there was not in the experiments any crystallographic evidence of the monoclinic form. The calculated heats of vaporisation (in calories per gram) are: Liquid, 31.5, octahedral 77.1, monoclinic 71 (estimated). By subtraction the heats of fusion and transition are: Octahedral \rightarrow liquid, 45.6; monoclinic \rightarrow liquid, 39 (estimated); octahedral \rightarrow monoclinic, 6 (estimated).

Optical Rotation of Quinine and its Salts.—N. Schoerl ("Pharmaceutisch Weekblad," April 10, 1926) has investigated the optical rotation of quinine and its salts from the point of view of utilising this characteristic property as an index of their purity. Quinine does not possess a definite optical rotation, as is the case with other substances, since the index depends upon a number of factors, such as the concentration of the solution, temperature, the nature and amount of the acid used to produce a solution of the alkaloid, the last being the most important cause of variations. Using a concentration of 1/20 mole of quinine and one mole of hydrochloric acid (at 17° C.), the optical rotation was found to be -170.6° , increasing with the addition of hydrochloric acid until it reached its maximum, -290.1° , in the presence of 2.5 moles of this acid. The principal cinchona alkaloids possess the following specific rotations (1/20 mole solution of their bichlorides at 17° C.): Quinine, -279.2° ; cinchonidine, -179.9° ; cinchonine, $+258.1^\circ$; quinidine, $+321.8^\circ$. Consequently, the presence of any one of the three secondary alkaloids will uniformly lower the absolute value of the levogyrate figure for quinine. Thus in a solution containing 2 millimoles of quinine + 2 millimoles of sulphuric acid + 2 millimoles of hydrochloric acid, the correct rotation of -18.03° will be lowered by the presence of 1 per cent. of one of these secondary alkaloids as follows: cinchonidine, 0.065; cinchonine, 0.35; quinidine, 0.39. The new edition of the Netherlands Pharmacopoeia requires for the above mentioned 2+2+2 solution an optical rotation of -17.7° to -18° , thus the permissible limit of deviation from the exact rotation of -18.03° amounts to a maximum of 0.38° , representing the presence of: 5.3 per cent. of cinchonidine; 1.1 per cent. of cinchonine; 1 per cent. of quinidine; 11.5 per cent. of hydroquinine. Since the determination of the optical rotation is not a reliable test for the admixture of cinchonine, the secondary alkaloid which chiefly occurs in quinine salts, the pharmacopoeia has included the Kerner-Weller test in the case of quinine sulphate, and the de Vrij test for the other salts, for the detection of this alkaloid. As a result of his investigations, the author has established that commercial samples of quinine mono- and bisulphate, and quinine mono-hydrochloride, are sufficiently pure to give a rotation of -17.9° to -18° . Commercial quinine is usually less pure than its salts, and shows an index below -18° . It is interesting to note that crude quinine sulphate obtained from Ledgeriana bark contains as much as 10 per cent. of cinchonine, which is reduced to 1–2 per cent. in the further manufacturing process. Cinchona barks from British India, the author remarks, apparently yield quinine salts, the optical rotation of which does not exceed -17.7° .

BIOLOGICAL CHEMISTRY

Ketosis.—M. W. Goldblatt ("Biochemical Journal," 1925, No. 6, p. 948), in dealing with the effect of various carbohydrates in ketosis or starvation in human subjects, points out that there is carbohydrate deficiency in both diabetics and normal individuals. In the former it is due to failure of insulin production; in the latter, withdrawal of carbohydrate is the cause. From an investigation of sugars administered during starvation ketosis this investigator finds that glucose, fructose, sucrose and maltose are antiketogenic in action, and that galactose, mannose, lactose, and glycerol are inert.

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Tetany.—P. Drucker and F. Faber ("Journal of Biological Chemistry," LXVIII, No. 1, p. 57) from blood tests on children suffering from tetany (both before and after cure) conclude that the "alkalosis" theory of tetany cannot be substantiated. Neither the PH value of the blood nor the alkaline reserve is greater when tetany is manifest than when it is cured. An important point is that treatment with calcium chloride must be regarded as combined acid and calcium therapy. The total calcium rises with an acid reaction, but the total calcium was always greater with CaCl_2 administration than with NH_4Cl when PH of blood was the same.

The Anti-Rachitic Value of Spinach is negligible is the conclusion to be derived from two researches by H. Chick and M. H. Roscoe ("Biochemical Journal," Vol. XX, No. 1, p. 137) and M. Boas (*loc. cit.* p. 153). Fresh spinach leaves, on the other hand, are a rich source of vitamin A. Spinach leaves irradiated with ultra-violet rays from a mercury vapour lamp become powerfully anti-rachitic, yet fresh spinach exposed to midsummer sunlight have only slight anti-rachitic properties. There is no obvious explanation for this discrepancy between the effect of direct sunlight and artificial ultra-violet light.

Insulin and Disappearance of Blood Sugar.—C. H. Best, J. P. Holt, and H. P. Marks communicated to the Royal Society on April 9 ("Nature," May 8, p. 678) two papers dealing with the oxidation, storage and disappearance of blood sugar following the administration of insulin. Since the total quantity of glucose disappearing is equal to the glycogen deposited and oxygen absorbed, the conclusion attained is that all the glucose which disappears through the action of insulin is either oxidised or deposited as glycogen. When the blood sugar of an eviscerated spinal preparation is maintained at a high level, the administration of insulin is followed by an increase in the glycogen content of the muscles sufficient to account for 40 to 50 per cent. of the disappearing sugar, whereas there is no demonstrable change during such artificial hyperglycæmia without insulin.

Biological Value of Foods.—The total nitrogen content of a food is considered by H. H. Mitchell and G. G. Carinan ("Journal of Biological Chemistry," April, p. 183) to be a better starting point in its evaluation as a source of nitrogen for anabolism than the protein content. The peculiar function of protein is to supply structural units (amino acids), but the proportions of these catabolised endogenously are fairly constant for different conditions of environment, as shown by the constancy of creatinine excretion, whilst the formation of new tissue is very little affected by conditions of feeding and bodily activity. These workers from growth experiments with rats found the following average biological value for nitrogen in various foodstuffs: White flour 52, egg 94, egg albumen 83, milk 85, veal 62, beef 69.

The Phytin Content of Foodstuffs has been investigated by H. P. Averill and C. G. King ("Journal of the American Chemical Society," March 1926). Naturally occurring phytin is mainly a mixed calcium, magnesium and potassium salt of inosite hexa-phosphate, $\text{C}_6\text{H}_8\text{O}_6(\text{PO}(\text{OH})_2)_3$, and is important in nutrition, because it supplies calcium and phosphorus in readily assimilable form, and also exerts a mild laxative action. The foodstuffs reported number 57, the following percentages of phytin being obtained:—Wheat, 1.16 to 1.36; wheat flour, 0.66 to 1.28; wheat bran, 4.53; barley, 1.07 to 1.19; buckwheat, 1.25 to 2.39; buckwheat flour, 1.86; buckwheat hull, 1.00; oats, 0.77; rye, 1.04 to 1.87; rye flour, 0.04 to 1.03; rye middlings, 3.33; almond nuts, 2.41 to 2.74; Brazil nuts, 2.62 to 3.30; hickory nuts, 1.48 to 1.67; filberts, 1.60 to 1.72; pecan nuts, 1.40 to 1.52; peanuts, 1.34 to 1.77; walnuts, 1.42 to 2.04; soy beans, 1.79 to 2.59; hempseed, 2.15; millet seed, 1.12; rapeseed, 2.63.

The Iso-Electric Points of Proteins and their Precipitation.—F. A. Csonka, J. C. Murphy and D. B. Jones, of the U.S. Bureau of Chemistry's Protein Investigation

Laboratory ("Journal of the American Chemical Society," March, 1926, p. 736), have determined the iso-electric points of a large number of proteins by a chemical method consisting of shaking with buffer solutions with a known PH range. A striking feature of the results is the agreement among the iso-electric points of each group of proteins, albumins ranging from PH 4 to PH 5; globulins from PH 5 to PH 5.5, and protamins from PH 6 to PH 6.5. There would seem to be a relationship between the iso-electric point of a protein and its precipitation with ammonium sulphate. Thus the most soluble proteins (albumins) have the lowest iso-electric points, while the less soluble α globulins, which precipitate at a low saturation of ammonium sulphate, have higher iso-electric points than the albumins. The method is not applicable to very soluble proteins (such as gelatin or egg albumen), or to proteins (e.g. edestin) with small solubility in the buffer used.

Storage of Vitamin A.—Experiments have been conducted by H. C. Sherman and M. L. Cammack ("Journal of Biological Chemistry," April 1926) as to the extent as to which vitamin A can be stored in the body of animals, this being judged by the length of time they could survive without this vitamin. They find that the bodily store of vitamin A is quickly and largely increased by the addition of cod-liver oil to a good diet, but that the animal only gradually completes the process of acquiring the maximum quantity it can store. A striking prolongation of life followed even one week's enrichment, but survival was not arithmetically progressive with two, four, or eight weeks' feeding on like rations. Accumulation of vitamin A is relatively rapid in the earlier stages, but slows as the maximum storage is approached. With both moderate and very liberal intake of vitamin A at a level rate the animals continued to increase their bodily store throughout the entire period of rapid growth. Six months old rats exhibited highest results, but it is easily possible for a two months old rat to secure a reserve as great as a six months old animal from a more enriched diet.

Vitamin E.—Further details are now available regarding this fat soluble vitamin, which was discovered by Evans and Bishop in wheat germ. H. M. Evans and G. O. Burr ("Proceedings of the Natural Academy of Sciences, Washington," Vol. II, p. 334) find that its richest source is wheat germ oil, but that it occurs also in oats, corn, lettuce, and alfalfa. It is separated from the unsaponifiable portion of wheat germ oil by distillation in superheated steam. It is accordingly very stable. Vitamin E is not precipitated by digitoxin and does not contain phosphorus, sulphur, nitrogen or the halogens. Sterility in female rats is prevented by a single dose of 5 milligrams, and 0.3 milligram daily is sufficient to ensure fertility of male sperms. Normal growth occurs in its absence, but animals are sterile, degeneration beginning in about two months. K. E. Mason (*loc. cit.* p. 377) described the histological changes causing sterility, which are degeneration of testes in the male and absorption of embryos late in gestation in the female rat (ovaries being normal). Recovery in the male on administration of vitamin E only occurs if some normal testicular tissue is still surviving.

Errors in Biological Assay of Fat Soluble Vitamins.—H. Chick ("Biochemical Journal," Vol. XX, No. 1, p. 119) points out that an important source of error in the biological method of estimating fat soluble vitamins A and D is caused by variation in the reserves of these two vitamins in the test rats. With the diets ordinarily used for breeding such animals their reserves of vitamin D are usually low compared with vitamin A, but great irregularity occurs if materials rich in vitamin D are at times included in the diet. Hence egg yolk and cod-liver oil are to be avoided, and pasture-fed (summer) milk must be used sparingly. In consequence, much of the previous work in the distribution of vitamin A would appear to need revision. H. H. Smith and H. Chick, in an accompanying paper (*loc. cit.* p. 131) give details of maintenance of a standardised breed of young rats suitable for work upon fat-soluble vitamins. The

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diet consist of milk; brown or white bread, or whole cereals and seeds; with fresh vegetables (carrot, turnip, cabbage, or spinach). Marmite daily is used as a source of vitamin B, and raw lean meat is given twice a week. The irregularity caused by increase in vitamin D in cows' milk in summer was lessened by replacing fresh milk with dried milk prepared from the winter milk supply.

Vitamin Destruction during Heat Sterilisation.—C. M. Dugdale and R. J. Munro ("Journal of the Society of Chemical Industry," May 21, 1926) survey the problems surrounding the effect of heat sterilisation on the vitamin content of foods. Generalisations cannot be made from previous work, owing to the large variation known to occur in the food itself and use of varying degrees of heat under different conditions of acidity, oxygen tension, and moisture content. As regards vitamin A the oxygen tension, and in the case of vitamin C the oxygen tension and reaction of material, are probably the most important conditions determining the final vitamin content with the same heat application. Experimental research on finely minced meat foods (containing 65 to 72 per cent. water and 6 to 10 per cent. fat) packed in 85 gram pots and heated to 110° C. for forty minutes showed that the centre reaches 110° C. in from thirty to thirty-three minutes. Allowing for the rate of cooling the centre is at 110° C. for about ten minutes on an average and between 105° and 110° C. for thirty minutes. It was found that the vitamin A and B values were only slightly affected by the heat necessary for sterilising meats on a commercial scale. The low values reported for canned meat may be explained by the elimination of soluble constituent (jelly) during packing.

Cytoplasmic Proteins.—A. B. Chibnall and C. E. Grover, in Part I of a chemical study of leaf cell cytoplasm ("Biochemical Journal," Vol. XX, No. 1, p. 108), give analyses of the "soluble" proteins which pass fairly readily into solution when the cytoplasmic gel is ground with water. These proteins are glutelins with similar chemical properties and an iso-electric range from pH 4.0 to 5.0 (at which their solubility is at a minimum). The leaf cell sap was in all cases alkaline, so that the proteins were probably present in the living cells as anions. Such studies are of interest in regard to the mechanism regulating permeability of cells. Analyses showed that the composition of the soluble proteins of cytoplasm is very similar, though these may be mixtures as shown by variation in amide-N, which is not seen in seed proteins.

Van Slyke Analysis of Soluble Proteins in Leaves of different Plants (results expressed in percentages of total Nitrogen)

Source	Amide N	Acid Humins N	Basic Humins N	Argi- nino N	Histi- dine N	Lysine N	Mono- amino N	Non- amino N	Total Basic N
<i>Brassica oleracea</i>	6.37	1.74	1.29	14.29	7.05	10.07	56.87	1.51	31.41
<i>Cochlearia Armoracea</i>	6.37	2.36	1.99	14.44	5.23	8.82	55.24	4.23	28.49
<i>Crambe cordifolia</i>	6.51	2.16	1.34	16.75	7.30	8.84	53.07	3.20	32.89
<i>Ficus Carica</i>	6.96	3.99	2.99	14.54	7.36	8.84	50.68	1.50	30.74
<i>Helianthus annuus</i> (aged leaves)	6.82	3.61	4.92	13.08	6.45	6.77	52.46	3.23	26.30
<i>Heracleum sphondylium</i>	7.95	2.40	1.90	15.15	10.20	7.60	50.36	4.00	32.95
<i>Medicago sativa</i>	5.51	1.22	1.48	15.32	3.09	10.28	59.11	3.19	28.69
<i>Phaseolus multiflorus</i>	5.69	3.12	1.06	16.08	6.24	10.07	53.85	3.40	32.39
<i>Spinacca oleracea</i>	6.93	0.76	1.71	13.81	3.89	10.47	58.42	2.58	28.16
<i>Tetragona expansa</i>	7.36	1.81	1.93	15.75	8.15	8.15	53.93	2.39	32.05
<i>Vicia Faba</i>	7.49	1.87	1.51	16.08	9.02	6.99	50.00	6.90	32.09
<i>Zea mays</i>	7.44	1.91	2.66	14.69	4.70	9.07	56.29	2.04	28.46

Such little evidence as is yet available shows that the soluble proteins undergo deamidisation as the leaf becomes more mature. A. B. Chibnall ("Journal of the American Chemical Society," March 1926) has found there is a close relationship between hydrogen ion concentration of cell sap and the iso-electric point of cytoplasmic proteins. The cell contents of leaves are highly buffered, and it was found that variations in hydrogen ion concentration were small.

Milk Powders in Nutrition.—A new phase in milk dietary is represented in results obtained by L. T.

Anderegg and V. E. Nelson ("Industrial and Engineering Chemistry," Vol. 18, No. 6, p. 620). It is found that highly desiccated material such as milk powder has a decomposing action on fats. Thus mustiness and discoloration ensued when cod-liver oil (5 per cent.) was mixed with whole-milk powder, skimmed-milk powder, starch, or finely ground dextrin, the odour of the products being strongly suggestive of acrolein. The addition of alcohol, wheat embryo oil, or water hinders this change, the protective action increasing in the order given. With 10 per cent. of water no decomposition of oil was evident after several months. Anhydrous solvents (ether, benzene, or chloroform) failed to prevent the production of mustiness. The authors believe that there may be a highly deleterious action between some of the components of a desiccated diet, and the simple expedient of adding water may greatly improve their nutritive value, though this is unsatisfactory because of lessened palatability and destruction of certain components. Rats which were fed on moistened skimmed-milk powder diets with separate administration of cod-liver oil proved to be fertile, a fourth generation being produced, whereas previously rats fed on a similar desiccated diet containing cod-liver oil were sterile. The conclusion deduced from this experiment is held to call into question the existence of a vitamin specific for reproduction (i.e., the antisterility vitamin E).

Antineuritic Vitamin Preparation.—Atherton Seidell ("Journal of Biological Chemistry," March 1926, p. 593) describes a simplified process for preparing a vitamin B concentrate from yeast in the form of a stable dry non-hygroscopic powder. Fresh ice-cold bottom yeast in the form of a thick mush is mixed with an equal volume of water and heated to about 90° C. with constant stirring. After several minutes it is moderately cooled, and coagulated protein and insoluble material removed by a Sharples supercentrifuge. [Air-dried yeast, one kilo finely ground to each 10 kilos of boiling water, may be used in place of liquid yeast.] To the clear dark-brown solution English fuller's earth is added in the proportion of 30 grams per litre, and the mixture is stirred constantly for at least half an hour. The suspension of fuller's earth, which absorbs about 90 per cent. of the antineuritic vitamin, is removed by centrifuging. This is thoroughly air-dried in a current of warm air, and the finely ground "activated solid," containing about 2 per cent. of nitrogen, will protect pigeons fed on a polished meal diet in doses of 0.1 to 0.2 gram when given on alternate days. For extraction

of adsorbed vitamin experiments indicate that a good yield of highly active product is obtained with one litre of N/0.3 sodium hydroxide per 100 grams of activated solid. The bowl of the Sharples supercentrifuge takes 2.5 grams of activated fuller's earth, and to this quantity is added 25 litres of distilled water and very concentrated sodium hydroxide solution representing 300 grams of NaOH. After three minutes' active agitation the mixture is run through the supercentrifuge in the shortest possible time, about 5 litres of distilled water being used to displace retained vitamin solution. The clear effluent is received in a vessel containing

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glacial acetic acid slightly in excess of the equivalent of alkali used. One or more of the aqueous extractions (each amounting to 30 litres) are promptly concentrated to $\frac{1}{10}$ or $\frac{1}{20}$ their volume below 75° C., this being accomplished in an efficient enamel-lined vacuum still within a few hours. The brownish precipitate which separates during concentration is not readily removed by filtration, but may be satisfactorily thrown down by an ordinary cup centrifuge. The clear solution is brought to a measured volume, and the amount of sodium acetate determined by evaporation and ignition of an aliquot part thereof, titrating the ash with standard sulphuric acid solution, using methyl-orange as indicator. The calculated amount of sulphuric acid to convert sodium acetate into sulphate is then added slowly to the actively stirred solution, and on standing in a cool place the larger part of the latter salt crystallises out. The drained-off solution is again concentrated *in vacuo* and re-cooled for further separation of inorganic sulphate. Methyl alcohol (to give a concentration of 20 to 30 per cent.) causes the precipitation of a further amount of material similar to that in the original evaporation, which is best removed by centrifuging. (A further addition of methyl alcohol is not advisable, as the active fraction begins to precipitate.) The product obtained by evaporation under reduced pressure is a very thick viscous paste, which is converted into a fine non-hygroscopic powder by addition of successive portions of strong alcohol (98 to 100 per cent.), the supernatant liquid being readily decanted off from the flocculent material. The process is continued until no more viscous residue remains. The flocculent precipitate, after further washing with alcohol by decantation, is collected upon a Buchner funnel. After being sucked dry it is completely freed from alcohol by vacuum distillation. The alcoholic solutions return a viscous product on evaporation, which by treatment with strong alcohol can be converted in the non-hygroscopic product, but the last portions of the viscous solids are, however, not easily converted. From 5 kilograms of activated solid (=100 kilos of fresh yeast) there is obtained approximately 200 grams of highly active product. About one-fourth remains dissolved in the final alcoholic solution, and it is hoped that a method will be found of converting this into the dry powder. The 150 grams of non-hygroscopic vitamin concentrate protects pigeons on an exclusive diet of polished rice in doses of about 0.01 gram given on alternate days.

INDUSTRIAL CHEMISTRY

Chemical Composition of Rosin.—D. N. Shaw and L. B. Sebrell ("Industrial and Engineering Chemistry," June 1926), throw new light on the sixty-year-old dispute as to whether rosin consists chiefly of abietic acid ($C_{20}H_{30}O_2$) or its anhydride ($C_{20}H_{28}O$)₂O. These workers find that all traces of oxygen must be carefully removed from the atmosphere of carbon dioxide in which abietic acid is heated to check evolution of water (and anhydride formation). A sample of rosin heated in oxygen-free carbon dioxide on analysis proved to consist of unchanged abietic acid, while the same specimen in dry commercial carbon dioxide absorbed oxygen, and produced mono-oxy-abietic acid. The latter gives on analysis results corresponding to abietic anhydride. It is believed that this oxidation explains the difference in the results of previous investigators, and leads to the conclusion that rosin consists essentially of free abietic acid.

Sulphured Olive Oil Test.—To determine the presence of an admixture of sulphured oil, i.e., the oil extracted from olive pulp by means of carbon disulphide, in ordinary expressed olive oil, P. Saccardi ("Giornale di Chimica Industriale ed Applicata," January 1926) recommends the following sensitive test: The reagents used consist of: (1) A filtered solution of 5 grams of lead plaster in 100 c.c. of pure benzol; (2) a solution of 30 grams of potassium hydroxide in 100 grams of alcohol (95 per cent.). On boiling a mixture of 1 c.c.

of sulphured oil, 1 c.c. of the solution of lead plaster in benzol, and 1 c.c. of the alcoholic solution of potassium hydroxide, it assumes a pronounced blackish colour, followed by precipitation of lead sulphide. When applied to samples of pure olive oil, obtained by expression, the test yields negative results, but it is so sensitive that by its means it is possible to detect the presence of 1 c.c. of sulphured oil in 100 c.c. of olive oil. It is interesting to note that even on heating a sulphured oil, or a mixture in which the latter is present, for two hours at 130° C., it still yields a positive test with this reagent.

Anti-Knock Compounds.—W. H. Charch, E. Mack and C. E. Boord ("Industrial and Engineering Chemistry," April 1925) give the following anti-knock coefficients for chemical compounds which suppress detonation in internal-combustion engines. Lead-tetra-ethyl, used in the United States on a large scale as an anti-knock dope for gasoline, is taken as 100 per cent. efficiency:—

Compound	Formula	Anti-knock co-efficient
Lead tetra-ethyl	Pb(C ₂ H ₅) ₄	100.0
Lead diphenyl dimethyl	Pb(C ₆ H ₅) ₂ (CH ₃) ₂	97.0
Lead diphenyl diethyl	Pb(C ₆ H ₅) ₂ C ₂ H ₅ ₂	93.5
Lead diphenyl diiodide	Pb(C ₆ H ₅) ₂ I ₂	80.0
		(approx.)
Lead diphenyl dichloride	Pb(C ₆ H ₅) ₂ Cl ₂	72.0
Lead diethyl dichloride	Pb(C ₂ H ₅) ₂ Cl ₂	67.0
Lead tri- <i>p</i> -xylyl	Pb(C ₆ H ₄) ₃	64.7
Lead diphenyl dibromide	Pb(C ₆ H ₅) ₂ Br ₂	60.9
Lead tetraphenyl	Pb(C ₆ H ₅) ₄	59.0
Nickel carbonyl	Ni(Co)	30.0
Bismuth trimethyl	Bi(CH ₃) ₃	20.2
Bismuth triethyl	Bi(C ₂ H ₅) ₃	20.2
Bismuth triphenyl	Bi(C ₆ H ₅) ₃	18.2
Tin (stannic) iodide	SnI ₄	12.8
Tin diethyl diiodide	Sn(C ₂ H ₅) ₂ I ₂	12.3
Lead thioacetate	Pb(CH ₃ CO) ₂	8.4
Lead ethyl xanthogenate	Pb(C ₂ H ₅ OCSS) ₂	7.1
Antimony triphenyl diiodide	Sb(C ₆ H ₅) ₂ I ₂	4.0
Stannic chloride	SnCl ₄	3.5
Titanium tetrachloride	TiCl ₄	2.7
Titanium tetraiodide	TiI ₄	2.7
Triphenylarsine	As(C ₆ H ₅) ₃	1.4

Power Generation.—L. C. Loewenstein, in the "Journal of the Franklin Institute," April 1925) reviews recent and future developments in power generation. He states that the amount of mechanical power used by a nation is a surprisingly accurate index of its general prosperity. The article relates chiefly to generation of electricity. Progress in more efficient utilisation of coal has been from hand firing to mechanical stoking, and during the last two years a real advance has resulted from a combination of coal pulverisation, control of the air required for burning it and preheating of same. The steam turbine has replaced the reciprocating engine as a heat engine, and further gains in fuel economy have followed employment of higher steam pressure (and temperature) in larger turbo-generator units with regenerative heating in low-pressure stages, steam pressures up to 1,200 lb. being used. Modern steam generating plant has an efficiency up to 93 per cent., and turbines are operating with over 80 per cent. efficiency. A turbine using mercury vapour has been used with success in a small single stage turbine outfit with sufficient success to warrant installation of a more efficient three stage turbine using mercury vapour from a boiler capable of supplying this at a higher pressure. With this arrangement it is expected that each kilowatt hour will consume fuel equivalent to about 10,000 British Thermal Units, compared with 13,700 B.T.U.s in the most modern power plants and 25,000 B.T.U.s in 1913. Fixed charges and fuel costs have doubled since 1913, and though a saving of over one-third of fuel had been accomplished, further reduction can hardly occur within the next five years except by economising on fixed charges.

Deterioration of Packed Chloride of Lime.—Department Bulletin No. 1,389 of the United States Department of Agriculture is by C. C. McDonnell and L. Hart, of the Insecticide and Fungicide Laboratory, and relates to the deterioration of chlorinated lime (bleaching powder) on storage in containers of the usual commercial type. The experimental results show that the content

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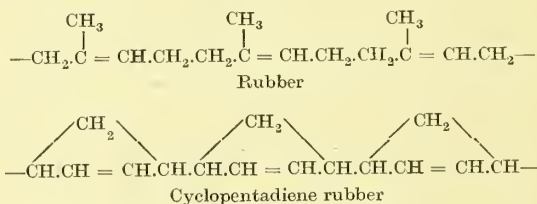
of "available" chlorine decreased at a fairly regular rate during storage, most of the chlorine lost being converted into chloride chlorine. Only slight loss occurred in total chlorine, whilst the change in chlorate chlorine was also small. The keeping qualities were not greatly affected by the size or type of container, what small difference existed being in favour of the larger metal containers over paraffined fibre packages. Chlorinated lime kept in tightly-stoppered glass bottles deteriorated slightly less than that stored in cans. Summer-packed bleaching powder deteriorated at the average rate for nine months, after which decomposition rapidly increased. This accelerated loss was accompanied by a decided increase in moisture content, which may indicate that absorption of water catalyses the change. Hand-packed material put up in summer showed a high rate of loss after ten months, but this could not be definitely attributed to the method of packing. Loss of available chlorine would seem to be slightly accelerated by visible light rays. The average loss in available chlorine for all samples from different sources and packed in various ways was 1.08 per cent. per month for the period covered (twelve to fifteen months), or very nearly 13 per cent. per annum. The average for the five hottest months was 1.44 per cent. per mensem, and for the five coldest months 0.61 per cent. per mensem.

Pectin Preparation.—M. A. Griggs and R. Johnston ("Industrial and Engineering Chemistry," June 1926) give interesting details of the preparation of a pure pectin from lemon albedo. The new procedures, which aim at eliminating impurities, consist in removing the yellow rind of lemon peel with a stainless steel knife, carefully peeling off the albedo (so that no pulp adheres) and immediately soaking it in alcohol for ten minutes. This treatment hardens the skin so that it can be ground in a meat chopper without darkening. Organic impurities (essential oil, resin, etc.) were removed by refluxing with alcohol (several portions) and then with ether, the albedo being dried below 65° C., when the extracts become colourless, some 85 per cent. of its original weight being lost by extraction and in drying. For extraction of pectin 15 grams of this dried albedo was extracted with successive portions of 750, 500 and 500 mls of *N*/0.01 hydrochloric acid at 90° C., the first portion being added cold and stirred for ten minutes. The purified albedo was about 27 per cent. of the dried product, or 4 per cent. on the original albedo. The ash content was reduced by dialysis (of 1 in 300 or 400 sol.) from 2.68 per cent. to 0.18 per cent. Precipitation of pectin was effected by the dropwise addition of two volumes of alcohol to the dilute solution (1 in 300 or 400) of pectin sol, this being important. The gelatinous mass can be flocculated satisfactorily at the anode on electrolysis with 110-volt direct current between platinum electrodes for two hours. The effect is identical with that produced by positive ions without the complication of added electrolytes. The precipitated pectin filters easily by suction through heavy silk cloth. When thoroughly dry it is a snow-white, hard powder, which disperses colloiddally in water, giving a sol with a much greater viscosity than that of a gelatin solution of equal concentration.

Fluosilicates as Insecticides.—S. Marcovitch ("Journal of Industrial and Engineering Chemistry," June 1926) gives results from extensive experiments on the use of fluosilicates as insecticides. During 1925 an "extra light" sodium fluosilicate was marketed, consisting of 70 to 75 per cent. of this compound with colloidal alumina to make a bulkier product. It represents a decided improvement so far as bulk is concerned, the material occupying some 60 cubic inches per lb. (compared with 80 cubic inches per lb. of good grade calcium arsenate). There appears to be sufficient fluorine in "extra-light" sodium fluosilicate to secure a kill for many insects when this is used undiluted. "Calcium fluosilicate compound," also recently marketed in two forms (70 and 120 cubic inches per lb.) is a by-product in the volatilisation method of treating phosphate rock

with phosphoric acid. It is insoluble, and therefore safe on foliage. When used at the rate of 5 lb. per acre calcium fluosilicate is not so toxic as sodium fluosilicate, but 30 lb. of "compound" to an acre was needed to give good control against Mexican bean beetle. Calcium fluosilicate compound appears to be very effective against flea beetles (including the new mint flea beetle in Michigan), and blister beetles proved very susceptible to it. As was expected, the striped cucumber beetle, which cleans its feet by drawing them through its mouth, also yielded to fluosilicates. Commercial sodium fluosilicate is apt to injure foliage unless diluted with one to three parts of hydrated lime, but the "extra-light" sodium fluosilicate did not cause burning with cucumber when used undiluted. Calcium fluosilicate does not appear to react to any great extent with lime sulphur washes or with Bordeaux mixture. Sodium fluosilicate is incompatible with the former, but killed the larvæ of potato beetle when added to 3:3:50 Bordeaux mixture at the rate of 2 lb. to 50 gallons of water without damaging the foliage of the potato plant. One great advantage of fluosilicates over arsenicals is their effectiveness against a variety of insects not controlled by arsenic. Furthermore, the fluosilicates appear to be fully as toxic against certain insects, whereas with man arsenic is apparently 100 to 300 times as poisonous.

Cyclopentadiene Rubber is a new synthetic product produced by catalytic polymerisation, which is described by H. A. Bornson and H. Staudinger in "Industrial and Engineering Chemistry" Vol. 18, No. 4, p. 381. Tin tetrachloride was found to be the best contact catalyst. Since it is soluble in most organic solvents and is easily removed from solution, the polymerising intensity of stannic chloride is much stronger than that of other halide salts tested, which included boron trichloride, titanium tetrachloride, arsenic trichloride, antimony tri- and penta-chloride, iron trichloride, and iron tribromide. The procedure adopted consisted of adding a 15 per cent. solution of tin-tetrachloride in chloroform to a chloroformic solution containing 25 per cent. of cyclopentadiene. The mixture turns yellow, then deep orange, and becomes viscous with the evolution of heat. Excess of absolute alcohol added after five minutes' standing precipitates a white glistening mass of rubber-like substance. Purification can be effected by dissolving in warm benzene and reprecipitating with alcohol. The product resembles freshly coagulated rubber, and possesses an elasticity somewhat like well-masticated chewing gum. It is colloiddally soluble in the usual rubber solvents, but insoluble in acetone, ether, or alcohol. The empirical composition corresponds to $(C_5H_6)_x$, the cryoscopic determination of its molecular weight in benzene lying between 1260 and 6670 [$(C_5H_6)_{20}$ and $(C_5H_6)_{100}$]. The structure can be formulated in a manner similar to rubber:—



Cyclopentadiene rubber possesses some unique properties. It can be vulcanised with sulphur chloride in chloroform solution, giving products from a soft gel to a hard rubber ebonite of extraordinary toughness. A benzene solution of cyclopentadiene rubber on evaporation deposits a resinous film which absorbs oxygen and forms a hard, glassy, insoluble finish. Cheap cyclopentadiene (it costs \$80 per lb. at present) might lead to some practical uses as a lacquer, and the field for further work in polymerisation is large, especially as crude amylenes result in the cracking of petroleum oils.

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PURE CHEMISTRY AND PHYSICS

The Source of Stellar Energy was the subject of a lecture by Professor A. S. Eddington on March 1 ("Nature," May 1, 1926, special supplement), in which in order to save the star from collapsing it was suggested that the rate of liberation of subatomic energy (E) was greater than the rate of radiation (L) from the star. Dr. J. H. Jeans, in a letter to "Nature" of May 15, describes this as a "gunpowder" star, as the heat set free by generation of energy itself causes more generation of heat, which would spread explosively through the star. Dr. Jeans upholds the uranium model of star, in which generation of energy proceeds spontaneously without regard to changes in temperature or density, and points out that as early as 1904 (in pre-relativity days) he suggested that the annihilation of matter may be a source of sub-atomic energy.

Heats of Vaporisation.—J. H. Mathews ("Journal of the American Chemical Society," March 1926) has measured the heats of vaporisation of 59 organic liquids by means of a direct electrical method and for which an accuracy of 0.1 calorie, or less, is claimed. This direct measurement is considered to have advantages over the usual condensation method, and to be more reliable than calculation from the most accurate vapour pressure data obtainable. The data include new figures relating to organic solvents, and are reproduced below because of their utility in both scientific and industrial chemistry.

Substance	Latent heat (L) (calories per gram with mean \pm error)	Temperature of determination °C.
Aromatics—		
Benzene	94.35 (± 0.03)	80.20
Ethyl benzene	81.08 (± 0.04)	135.17
<i>n</i> -Heptane	76.35 (± 0.04)	97.23
4-Methyl-heptane	70.86 (± 0.02)	117.20
Cyclohexane	85.62 (± 0.07)	80.00
Methyl-cyclohexane	76.92 (± 0.00)	99.90
Cyclo-hexene	88.70 (± 0.06)	81.60
Toluene	86.50 (± 0.01)	109.66
<i>o</i> -Xylene	82.89 (± 0.09)	141.41
<i>m</i> -Xylene	81.85 (± 0.09)	138.30
<i>p</i> -Xylene	81.03 (± 0.02)	137.12
Organic Halogen Compounds—		
Methylene chloride	78.74 (± 0.23)	40.48
Ethylene chloride	77.34 (± 0.03)	82.21
Ethylene bromide	46.24 (± 0.04)	130.80
Ethyl iodide	45.62 (± 0.04)	71.16
<i>n</i> -Butyl iodide	45.93 (± 0.03)	129.50
Trichloroethylene	57.24 (± 0.03)	85.69
Tetrachloroethylene	50.04 (± 0.03)	120.69
Tetrachloroethane (<i>sym.</i>)	55.02 (± 0.07)	145.03
Ethylene chlorohydrin	122.97 (± 0.08)	126.55
Chlorobenzene	77.61 (± 0.08)	130.56
Bromobenzene	57.63 (± 0.05)	154.79
<i>o</i> -Chlorotoluene	72.61 (± 0.10)	158.07
<i>p</i> -Chlorotoluene	73.14 (± 0.03)	160.38
Chloroform	58.80 (± 0.05)	60.14
Carbon tetrachloride	46.55 (± 0.02)	75.40
Alcohols—		
Methyl alcohol	263.31 (± 0.31)	63.81
Ethyl alcohol	201.88 (± 0.09)	77.42
Iso-propylalcohol	159.23 (± 0.04)	81.25
<i>n</i> -Butyl alcohol	141.31 (± 0.18)	116.78
Iso-Butyl alcohol	138.25 (± 0.03)	106.84
sec-Butyl alcohol	134.41 (± 0.48)	98.13
Iso-Amyl alcohol	119.84 (± 0.06)	130.17
Benzyl alcohol	111.58 (± 0.09)	204.25
Esters—		
Methyl formate	112.38 (± 0.07)	31.32
Ethyl formate	97.21 (± 0.04)	53.33
Propyl formate	88.15 (± 0.11)	80.01
<i>n</i> -Butyl formate	86.76 (± 0.07)	105.12
Iso-Butyl formate	78.51 (± 0.05)	97.03
Methyl acetate	98.11 (± 0.09)	56.34
Ethyl acetate	87.63 (± 0.10)	76.00
β -chloro-ethyl acetate	80.84 (± 0.34)	141.50
Propyl acetate	80.29 (± 0.05)	100.42
Iso-Butyl acetate	73.76 (± 0.06)	115.47
Methyl propionate	87.59 (± 0.04)	79.00
Ethyl propionate	80.07 (± 0.03)	97.64
Propyl propionate	73.18 (± 0.03)	120.62
<i>n</i> -Butyl propionate	71.15 (± 0.08)	144.87
Methyl iso-butyrate	78.15 (± 0.04)	91.05
Ethyl butyrate	74.72 (± 0.10)	118.90
Ethyl iso-butyrate	72.08 (± 0.04)	109.22
Ketones—		
Acetone	122.09 (± 0.02)	56.00
Methyl ethyl ketones	105.95 (± 0.04)	78.20
Various—		
Ethyl ether	86.08 (± 0.06)	33.99
Furfural	107.51 (± 0.21)	160.55
Nitromethane	134.94 (± 0.35)	99.9
Propionic acid	98.93 (± 0.06)	139.30
Pyridine	107.38 (± 0.07)	114.13

The Weight of the Ideal Drop.—W. D. Harkins ("Nature," May 15, 1926) discusses the conception of the weight of the ideal drop as equal to $2\pi r\gamma$ or the circumference of the tip of the drop pipette multiplied by the surface tension (γ). The point is of great importance in connection with the determination of interfacial tension by the drop-weight method, as the usual statement that the weight of the drop which falls is equal to a constant multiplied by the circumference of the tip, may involve an error of as much as 60 per cent. The correct equation is

$$W = 2\pi r\gamma - \pi r^2 \gamma \left(\frac{1}{r} + \frac{1}{s} \right)$$

which approaches $2\pi r\gamma$ as the radius of the tip becomes exceedingly small.

The Growth of Crystals.—Professor C. H. Desch, in two lectures at the Royal Institution, London, on March 16 and 23, 1926, stated that all modern studies of crystals start from the idea of the space lattice in which atoms, whether occurring singly or grouped to form molecules, are arranged in spatial units exactly repeated at regular intervals in three dimensions. It follows that the several planes have different chemical properties and each set of similar faces its own chemical characteristics (which is confirmed by etching) due to what chemists call "residual affinity" varying the packing of atoms in a plane. Growth of crystals is a discontinuous process, and occurs by adsorption of successive thin sheets of atoms or molecules one unit thick. With well developed crystals formed by slow growth there is ample time for readjustment of balance of material withdrawn from solution and heat given out. On the other hand, when growth is rapid, the supply of material by diffusion may not keep pace with withdrawal and sharp angles of crystals, which are placed more favourably, grow by preference. Thus the crystal assumes a star shape or becomes branched into beautiful dendritic forms, as in "trees" made by electrolysis of metallic salts. Periodic crystallisation is very simply observed under the microscope with a thin layer of molten salol in which the advancing point of each needle can be seen to withdraw material from the liquid leaving a gap, with molten salol standing up as a wall in front of the crystal edge. An appreciable time is required for the viscous liquid to flow into contact again with the crystal when it resumes growth. The crystal, when complete, is marked by transverse lines indicating the stages of progress. The study of periodic crystallisation is closely connected with periodic precipitation in jellies (Liesegang's rings), the structure of agates being in all probability periodic crystallisation of silica from the gelatinous contents of a cavity in a rock.

Alkaloidal Indicators.—H. Wales, of the Drug Control Laboratory, U.S. Bureau of Chemistry, in "Industrial and Engineering Chemistry," April 1926, reviews the question of suitability of indicators for alkaloidal titration. It is stated that there has not been any extensive investigation of the accuracy of the usual procedure adopted in the determination of alkaloids, which consists of adding excess of standard acid to dissolve the base and back-titration with standard alkali to methyl red. Also the discrepancies in the results obtained from the hydrogen ion concentrations of alkaloidal salts determined by different methods are too great to be explained on the basis of reduction of the alkaloid by the hydrogen electrode. Some explanation may be afforded by Tutin's observation that quinine sulphate crystallised from slightly acid or alkaline solutions required several crystallisations to make it neutral again, so that it is possible that commercial samples show wide variation. The author used in his investigations commercial alkaloidal products from well-known manufacturers, the alkaloid (100 mgm.) being dissolved in a slight excess of acid, and the solution made up to 50 c.c. Excess of acid was titrated with alkali, and the voltages at definite intervals recorded, using quinhydrone and saturated calomel electrodes. During titration the hydrogen value of the solution changes slowly, until all but a very small portion

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is neutralised, a sharp break in the curve (indicated by a rapid change in voltage) accompanying the neutralisation of this last small fraction. Further addition of alkali thereafter produces only small changes in *PH* value. The best use of a particular indicator follows when the mid-point of its colour range lies within this region of rapid change during an alkaloid titration, accordingly it is obvious that the end point of the titration is not sufficient to determine the proper indicator, but that the range in which the colour change occurs for each alkaloid should be known, as indicated in the table below:—

Indicators for Alkaloid Titrations

Salt of	Average <i>PH</i>	<i>PH</i> range of Indicator	Indicator
Aconitine	5.04	4.2—5.8	Methyl red
Atropine	4.81	3.8—5.8	Methyl red
Atropine	5.56	3.8—7.2	Methyl red, propyl red, bromo-cresol purple
Brucine	4.85	3.9—6.0	Methyl red
Cephaeline	4.81	4.2—5.4	Methyl red
Cinchonine	6.02	5.5—6.5	Bromo-cresol purple
Cinchonidine	5.90	5.4—6.4	Bromo-cresol purple
Cocaine	5.20	4.0—6.5	Methyl red
Cocaine	4.86	3.6—6.3	Methyl red
Cotarine	5.97	4.9—7.0	Bromo-cresol purple
Delosine	4.42	3.6—5.2	Bromophenol blue
Diacetylmorphine	4.89	4.2—5.7	Methyl red
Emetine	4.90	4.2—5.6	Methyl red
Ethylhydrocupreine	6.33	5.6—7.0	Bromo-cresol purple
Ethylmorphine	4.99	4.2—5.8	Methyl red
Homatropine	5.74	3.9—7.6	Methyl red, propyl red, bromo-cresol purple
Hydrastinine	4.45	3.8—5.0	No end point with methyl red or bromophenol blue
Hyoscine	4.83	3.6—5.6	Bromophenol blue
Hyoscyamine	5.83	3.8—7.6	Methyl red, propyl red, bromophenol purple
Morphine	4.68	4.0—5.2	Methyl red
Narceine	Salt completely dissociated		
Narcotine	4.43	3.9—4.9	Bromophenol blue
Nicotine	5.26	4.4—6.1	Methyl red
Papaverine	4.23	3.8—6.4	Indistinct, cannot be titrated
Physostigmine	4.85	3.8—6.0	Methyl red
Pilocarpine	4.31	3.6—5.0	Bromophenol blue
Quinine	6.12	5.5—6.5	Bromophenol purple
Quinidine	6.10	5.5—6.5	Bromophenol purple
Sparteine	Salt completely dissociated		
Strychnine	4.81	3.8—6.0	Methyl red
Thebaine	5.08	4.0—6.2	Methyl red
Yohimbine	4.72	4.0—5.3	Methyl red

DENTISTRY

Amalgams of Mercury and Gold.—G. T. Britton and J. W. McBain ("Journal of the American Chemical Society," Vol. 48, No. 3, p. 593), in continuation of a systematic study of dental amalgams, have carried out experiments on the effect of gold which is ordinarily added for its "benevolent influence." It has been found that the gold passes almost entirely into the solid phase whether the amalgam consists of mercury with pure tin or pure silver, or with both tin and silver. The present investigation concerns the binary system of mercury and gold, the results showing that the solubility of gold in mercury increases slowly with rising temperature from 0.2 per cent. at 18° C. to 8.3 per cent. at 289° C., when the rise becomes more rapid and passes through a maximum at 14.6 per cent. of gold at 342° C. The solubility temperature curve descends to a minimum at 320° in the region of 22 per cent. of gold, from which point the gold solubility increases extremely rapidly with the temperature up to the limit of this research, which is 55.33 per cent. at 410.5° C. The rather flat maximum appears to indicate the formation of a compound, AuHg₂, containing 14.3 per cent. of gold.

Treatment of Dental Sepsis.—E. M. Brockbank ("British Medical Journal," March 27, 1926) states that when obvious dental sepsis with inflamed and even bleeding gums is present in a case of septicæmia, and for which no other cause can be proved, the teeth should be extracted. Generally there is only a reduced number of teeth present, and they can all be extracted with safety. Bleeding is not likely to be as troublesome when many teeth are removed as it is for a single tooth or

two teeth, the shock to the peripheral vasomotor system being so great that the arteries contract. The shock of extraction in all his cases has been very little; what bleeding has taken place has done good, and the temperature has soon come down to normal. A skilled dentist takes only a few minutes to remove many teeth, and the anæsthetic for this time has so far done no harm in cases with pulmonary complications. If most of the teeth are still in the mouth, the worst half could be removed at one time and the rest cleaned with carbolised dental pumice-stone powder and the gums painted with half-strength tincture of iodine daily. This cleans up a mouth very much, but will not remove the deep-seated sepsis.

Pyorrhœa.—T. B. Hartzell ("Oral Health," December 1925) states that drugs have small place in the treatment of pyorrhœa. Vaccines and serums have proved useless, and the best weapons to fight the disease are cleanliness and proper food. A revealing stain made of

Iodine	...	...	...	...	50 gr.
Zinc iodide	...	...	...	...	15 gr.
Potassium iodide	...	...	...	...	15 gr.
Glycerin	...	...	...	...	½ oz.
Water	...	...	...	...	½ oz.

should be supplied to the patient to be used on the teeth and gums twice a week after cleansing, in order to show if this operation has been properly performed, and also to gain the healing astringent action of the solution on the soft tissues. Sodium ricinoleate to the amount of 2 per cent. of the total bulk of any cleaning preparation that is so compounded that the sodium ricinoleate will not be precipitated is stated to be of material help in the maintenance of germ-free tooth surfaces. Where rapid shrinkage of tissues is indicated, and the epithelium is soft and tender, an ounce of zinc sulphocarbolate in eight ounces of water may be used. This should be massaged into the tissues with cotton wool several times daily. For scouring the tooth surfaces brushes capable of reaching the lingual and distal and interproximate as well as the buccal surfaces are required. These should be made of stiff bristles with the tufts at least one-eighth inch apart. The length of the bristles should vary according to the width of the teeth. When the bristles become too soft to scour, the patient should wash the brush in soap and water, then dip it in a solution of salt, and allow to dry before using.

Translucent Zones in the Enamel.—J. Howard Mumery ("British Dental Journal," May 1, 1926) refers to a report on the "Structure of the Teeth in Relation to Dental Disease," published by the Medical Research Council, in which he described some appearances strongly suggestive of a protective zone in the enamel against the advance of caries. Further research points to the probability of the translucent zone being an area of denser calcification than the rest of the enamel, and closely corresponds to the similar evidences of the nature of the translucent zone in the dentine. These zones in the dentine serve at all events as a temporary barrier to the advance of the micro-organisms of decay; they not only occur in caries, but also as a response to irritation from attrition, and they are seen in arrested caries, where they seem to form a more resistant surface to wear. These areas in the dentine stain very imperfectly and in many cases not at all. When the capillary attraction method is used with alcoholic fuchsin (a very penetrating stain) they usually remain quite uncoloured, and there is every reason to believe that there is a deposition of calcific material in and around the tubules in these areas. If such deposition of lime salts can take place in the dentine, it seems highly probable that a similar deposition can occur in the enamel, as the dentinal tubes are in many places, more particularly at the bundles or whorls, so conspicuous at the dentine enamel junction, continuous with tubular spaces in the enamel. The coincidence of these clear zones with the carious portion of the enamel and their difference of appearance, extent and situation from other translucent spaces not associated with caries point to its being a similar con-

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dition to that found in the dentine and due to reaction on the part of the pulp. An examination of all the available sections of non-carious enamel shows that there are no translucent areas at the margin of the enamel in the least resembling those seen in carious teeth. Whatever this alteration in the enamel may be, there appears to be a distinct change of structure which is not due to decalcification and is intimately associated with the decayed area, apparently indicating that enamel cannot be a dead inert substance, but is capable of reaction to stimuli, and therefore, like other tissues of the body, endowed with vitality.

ESSENTIAL OILS

The Oil of *Casalpinia Seppan*.—According to Van Romburg ("Koninklijke Akademie der Wetenschappen," Amsterdam, 1925, 3/4, 741), this essential oil contains *dextro-α*-phellandrene and an olefinic terpene. The terpene mixture has a specific gravity 0.813 at 22°, and boils at 65-70° at 20 mm. pressure. Its refractive index is 1.4730 at 16°, and optical rotation +60°. The olefinic terpene has not been definitely identified.

Oil of *Chenopodium Rigidum*.—This plant, which is indigenous to Bolivia, also occurs at high altitudes in the Argentine provinces of Tucuman, Salta, and Jujuy, where it is known as "arçayuyo," and is used locally in the form of an infusion in gastro-intestinal disturbances. F. Zelada ("Rivista Italiana delle Essenze e Profumi," May 15, 1926), dean of the Faculty of Pharmacy in the University of Tucuman, attributes its stimulant and antidiarrhetic properties to its content of essential oil, which amounts to 0.35 per cent. in the flowering plant deprived of its leaves. The yellow coloured oil has a penetrating, characteristic aromatic odour, with a faintly camphoraceous taste; it possesses the following physical and chemical constants: Specific gravity (15° C.), 0.8852; optical rotation, +1.9°; refractive index (20° C.), 1.4770; boiling point, 182° to 185°; saponification number, 19.3; total alcohols, 22.42 per cent.; esters (linalyl acetate), 6.755 per cent.; free alcohols (geraniol), 17.113 per cent. The oil is neutral; insoluble in alcohol of 70 to 80 per cent., but soluble in alcohol of 90 to 95 per cent.

Oil of *Satureia Eugenoides*.—F. Zelada ("Rivista Italiana delle Essenze e Profumi," May 15, 1926) reports that the glandular hairs of the leaves of *Satureia eugenoides* (Grisebach) Briquet, a plant which is found in the Argentine provinces of Tucuman and Catamarca, where it is known as "muña-muña," and its infusion used as a stimulant and aphrodisiac, contain an essential oil, of a pale yellow colour, possessing a penetrating pleasant odour, resembling somewhat that of oil of origanum, and a pungent taste recalling that of thymol. The leaves yield 0.9 per cent. of oil, which exhibits the following characters: Specific gravity (15°), 0.91443; optical rotation, +18.9°; refractive index (21°), 1.4759; boiling point, 183° to 194°; acid number, 2; ester number, 60.7; saponification number, 62.7; phenols, 8 per cent.; esters (linalyl acetate), 21.26 per cent.; alcohols (linalol), 16.7 per cent.; total alcohols after acetylation, 65.5 per cent.; free alcohols (geraniol), 48.8 per cent. It has a faintly acid reaction; insoluble in alcohol 70 per cent., but is soluble in alcohol of 80, 90 and 95 per cent.

A New Chlorocamphor.—Y. Murayama and C. Arihara ("Yakugakuzasshi," February 1926) describe the formation of a new chlorocamphor from pinene hydrochloride by oxidation with chromic anhydride. The authors considered the position of the CO-group to be *para* to Cl of pinene hydrochloride, and the oxidation product, therefore, may be called *p*-chloroepicamphor. To 120 grams of chromic anhydride dissolved in 200 c.c. of glacial acetic acid, 50 grams of pinene hydrochloride was gradually added under constant stirring, the temperature being always kept below 30°, and the whole stirred first in the room temperature for 3 hours, and then at 40-45° for 3 hours, finally at 90° for 2 hours. The oxidation product was poured into ice water, the pre-

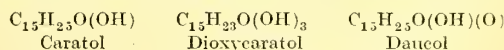
cipitate filtered, and dried on the porous plate. The crude chlorocamphor thus obtained was converted into semicarbazone and oxime. *p*-Chloroepicamphor was obtained from semicarbazone by warming with saturated oxalic acid solution for 2 hours. It was purified by distillation with steam and recrystallised from alcohol, from which it separated in a white crystalline mass, m.p. 159-160°. Found: C 64.76 per cent., H 8.32 per cent., Requires: C₁₀H₁₅ClO, C 64.34 per cent., H 8.04 per cent.

Differences in Camphor Oils.—From different parts of two camphor trees, one a ninety-year old genuine tree, and the other a sixty-year old *hoshō* tree, i.e., a tree which gives oil poor in camphor but rich in linalool. Kinzō Kafuku and Kiyosi Kawaguti ("Yakugakuzasshi," February 1926) prepared 27 samples of camphor oils and compared their properties. Their results are summarised in the following conclusions:—(A) For the genuine plant: (1) The camphor content of the oil is poorer in the upper trunk than in the lower parts. (2) The oils from the core have greater densities than those from the outer parts. (3) The alcoholic content of the oil is higher in the oils from lower parts and outer parts than in those from the upper as well as from the inner portions. (B) For *hoshō* plant: (1) The camphor content of the oil is higher in those from the south side than those from the north side. (2) The oils from the outer and lower portions rotate the plane of polarised light more to the right than those from the inner and higher portions. (3) The alcoholic content and the turbidity number are inverse to the dextrorotatory power. (4) The leaf oil contains only traces of camphor, is strongly levorotatory, and has the highest alcoholic content—more than 28 per cent., as C₁₀H₁₆O.

Essential Oil of Carrot.—Asahina and Tsukamoto ("Journal of the Pharmaceutical Society of Japan," 525, 1, 1925) have examined the essential oil obtained from the seeds and umbels of *Daucus Carota*. The oils examined had the following characters:—

	Fruits	Umbels	Fruits and Umbels
Specific gravity at 22°	0.909	0.9584	0.927
Rotation ..	-5.98°	+5.06°	+1.04°
Acid value ..	0	24.9	2.86
Ester value ..	74	66	69.7

Another specimen of the oil from the fruits and umbels gave an extra value after acetylation 156.8. Richter has on a previous occasion isolated a crystalline body of the formula C₁₅H₂₅O₂, which he named daucol. The present investigators, however, isolated a body of the formula C₁₅H₂₅O, which they name caratol, and are of opinion that daucol is formed from caratol by oxidation, though the intermediate step of dioxycaratol, the three bodies having the following relationships:—



Caratol is oxidised by potassium permanganate to dioxycaratol, a crystalline body melting at 142°. Caratol is a liquid of specific gravity 0.9646, boiling point 109° at 15 mm.; refractive index, 1.4912 at 15°; and specific rotation, +28°.

Oil of *Ledum Groenlandicum*.—E. V. Lynn, Ar. Lehman and R. Cain, reporting on the volatile oil of the above-named plant ("Journal of the American Pharmaceutical Association," April 1926, p. 263), state that this evergreen shrub, which is described as Labrador tea and used as a pectoral and tonic, appears not to have been previously investigated. Experiments showed that the yield of oil in the stems was small, and in a second distillation the fresh leaves were used with a minimum amount of stems and the total yield only amounted to 0.1 per cent. based on dry material. The oil from both stem and leaves was dark amber in colour, while from the latter only the distillate was emerald green. The mixed oils had s.g. 0.8998 at 21.2° C. and refractive index 1.4917. The amount of material precluded any closer investigation, but the results obtained indicate several conclusions. There is very little, if any, ledum camphor or other

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stearoptene present in this species, although the season of the year, March, in which it was collected may have an influence. Fractionation points to limited quantity of phenols and aldehydes, little or no dicyclic terpenes, while strongly suggesting the presence of considerable monocyclic terpenes. Sesquiterpenes are present, also azulene. A more extended investigation will be made when larger quantities of material are available.

Oil of *Melaleuca Sinarifolia* and *M. Alternifolia*.—

A. R. Penfold ("Journal and Proceedings of the Royal Society, N.S.W.," LIX, 306) has prepared and described the essential oils of the above two species of *Melaleuca*. *M. Sinarifolia* is an attractive tree known as the Tea Tree, which occurs abundantly in the coastal districts of New South Wales and Southern Queensland. The essential oil is a pale lemon-yellow liquid with a pleasant terpene and nutmeg odour. Three samples distilled had the following characters:—

	1	2	3
Yield	1.34%	2.05%	1.59%
Specific gravity ..	0.8927	0.8973	0.8992
Rotation	+5.2°	+6.8°	+3.3°
Refractive index ..	1.4780	1.4760	1.4752
Ester number ..	1.3	1.8	2.7
„ (acetylated) ..	68.5	82.1	58.2

The oils were fractionated, and the fractions boiling below 190° were treated with a solution of resorcin until nearly all the eucalyptol had been removed. The residue was repeatedly fractionated. A substance was obtained which the author believed to be pinene, but it yielded a nitrosochloride melting at 86-87°, instead of at 109°, the melting point of pinene nitrosochloride. Because pinene has been definitely identified in the essential oil of *M. Alternifolia*, the author is satisfied that it is present in this oil. The author is also of opinion that sabinene is present, although he has not definitely identified it. Two isomeric terpenes and cymene were identified with certainty. Cineol was present to the extent of about 16 per cent. Terpineol and a glycol were identified, and a sesquiterpene or mixture of sesquiterpenes found, of which the principal is either cadinene or a sesquiterpene which yielded cadinene hydrochloride on treatment with dry hydrochloric acid gas in ethereal solution. A sesquiterpene alcohol was isolated (not necessarily in an absolutely pure state), which had the following characters:—boiling point at 10 mm. = 134-137°, specific gravity at 15° = 0.9223; optical rotation = +12°; and refractive index at 20° = 1.5100. A phenolic body was also found to be present in small amount. *M. Alternifolia* is common in the north coastal district of New South Wales, being especially abundant at Copmanhurst, on the Clarence River. The essential oil has a pale lemon-yellow colour, and a pleasant odour of terpenes and nutmeg. Two samples had the following characters:—

	1	2
Yield	1.83%	1.76%
Specific gravity ..	0.8961	0.8958
Rotation	+7.4°	+6.8°
Refractive index ..	1.4782	1.4790
Ester number ..	3.7	7.4
„ „ (acetylated) ..	79.4	83.6

Dextro- α -pinene was definitely proved to be present, as well as α - and γ -terpinene. Cymene, cinerol, terpineol, sesquiterpenes, a sesquiterpene alcohol and a phenolic constituent were also identified. The oils from these two species of *Melaleuca* are therefore practically identical.

FIXED OILS AND FATS

Rancidity Test.—T. Stamm ("Pharmacia," No. 5, 1925) utilises the property of diphenyl-carbazide of yielding coloured reaction products with free fatty acids, and also with aldehydes and ketones, as a test for the rancidity of oils and fats. The reagent is prepared by mixing 0.1 gram of diphenyl-carbazide with 10 grams of pure liquid paraffin; the test is applied by mixing five drops of this reagent with ten drops of the fatty oil under examination, and heating the mixtures for three minutes, not longer, in a boiling water bath. If the mixture on cooling assumes a reddish colour, it may be

assumed that the oil or fat contains an excessive amount of free fatty acids, and consequently exhibits incipient rancidity. When used in the above proportions, the test will reveal the presence of not less than 1 per cent. of free fatty acids, and this limit of sensitivity is of importance in view of the fact that some freshly-prepared oils and fats contain small amounts of free fatty acids, e.g., castor oil, medicinal, 0.68-1.5 (technical up to 14); sesame oil, 0.47-1 (technical up to 5.75); cod-liver oil, medicinal, 0.34-0.6 (natural up to 6); lard, 0.09-1 per cent.

Kurrajong Oil.—F. R. Morrison ("Journal of the Proceedings of the Royal Society, N.S.W.," LIX, 267) has examined the fixed oil of the seeds of the Kurrajong, a tree attaining a height of 20 to 60 feet, the habitat extending from Gippsland in Victoria throughout the eastern half of the Continent to the Gulf of Carpentaria. The tree is *Brachychiton populneum*, and was formerly known as *Sterculia diversifolia*. The seeds, which are contained in pods, are fig-shaped, and consist of a white kernel enclosed in a black shell, the latter being covered with a yellow furry coating, which imparts an oiliness to the skin when handled. Two samples (yield about 23-24 per cent.) had the following characters:—

	1	2
Melting point	30°	—
Specific gravity	0.9083 ^{30°}	0.9203 ^{15°}
Refractive index	1.4676	1.4709
Acid value	65	42.7
Saponification value ..	198	192.8
Iodine value	101.3	107.6
Unsaponifiable matter ..	1.1%	1.5%

A sample of the mixed fatty acids was prepared, and had the following characters:—Melting point=33.5; specific gravity at 15°=0.8908; refractive index=1.4548 at 40°; iodine value=100.9; neutralisation value=202.4; mean molecular weight=277. An approximate separation into liquid and solid fatty acids gave the following amounts:—Solid acids, 12 per cent.; liquid acids, 78 per cent. This oil may be classed amongst the semi-drying oils.

Oil of *Johannesia Princeps*.—G. Etzel and C. G. King have examined the seed and expressed oil obtained from the nuts of the Brazilian tree *Johannesia princeps*, N.O. *Euphorbiaceæ*. The nuts and oil are widely used in Brazil for their laxative effect, it being reported that the oil has four times the potency of castor oil as a cathartic, and has the additional advantages of an agreeable flavour and odour, low viscosity, and not causing nausea or intestinal irritation. The kernels weigh 10 to 20 grams each and are almond like in consistency, yielding 25.6 per cent. of oil by expression and 55.7 per cent. by extraction. The characteristics of the clean, light yellowish-green oil were found to be: sp. gr. 0.9257 at 15.5° C.; refractive index, 1.4770 at 15° C.; iodine number (Hanus), 115.6; saponification number, 192.15; ester number, 186.71; acid value, 5.44; acetyl value, 8.75; Reichert-Meissl number, 1.2; Polenske number, 0.345; unsaponifiable matter, 1.17. A phytosterol melting at 131° C. was separated from the unsaponifiable matter. The data show that the oil is not of the same type as castor oil. Chemical separation of the fatty acids showed corrected values of 7.79 per cent. for saturated fatty acids and 80.45 per cent. unsaturated acids (including 52.24 calculated as olive acid and 27.90 calculated as linolic acid). The composition of the seed and fat-free cake is given as follows:—

	Original seed	Fat-free cake
	Per cent.	Per cent.
Oil	56.89	—
Moisture	2.21	5.27
Ash	5.20	11.7
Crude fibre	2.09	4.84
Nitrogen	4.33	10.05
Protein (Nx 6.25) ..	27.08	62.84
Carbohydrates (by difference) ..	6.56	15.44
Phytin	5.70	13.29

The press cake contains a toxic principle (johannissin, analogous to ricinin), but the analysis shows that it has possibilities as a fertiliser.

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MATERIA MEDICA

Cochineal Insects and the Prickly Pear Campaign.—

Three strains of the wild cochineal (*D. tormentosus*) insects, from Texas, Arizona, and Chico, have been successfully introduced into Australia to combat the prickly pear pest, states Alan P. Dodd ("Nature," May 1, 1926). Of these the Chico cochineal from California is the most destructive to the common pear pest (*Opuntia inermis*), while the Texas form favours the spiny pear (*Opuntia stricta*) pest. The Arizona strain seems equally suited to either plant. These cochineals are doing splendid service in breaking up plant masses and destroying old plants, but probably the most useful feature is the manner in which they attack young seedlings. The Indian cochineal (*D. indicus*) will exist only on the smooth tree pear (*Opuntia monacantha*), destroying large clumps within a few months. Another importation with great promise is *Cactoblastis cactorum*, a caterpillar which is a voracious feeder.

MEDICINE

Strophulus.—Lichen urticatus or strophulus, a common ailment in young children, is characterised by the appearance of crops of intensely irritable papules, often associated with gastro-intestinal disturbances, which recur indefinitely without any apparent cause. Pasteur Vallery-Radot and P. Blamoutier ("Paris Médical," April 24, 1926) report excellent results from the use of peptone, to produce digestive anti-anaphylaxis, in this complaint. In the first place the number of meals must be reduced, and nothing must be taken between meals. Exactly one hour before each meal 0.5 gram of peptone is administered during a period of ten days, and after an interval of five days this treatment is resumed, to be again repeated, if necessary, after allowing another interval; the administration of peptone is finally discontinued one month after the complete disappearance of the papules. Of twenty cases treated by this method in children of one to four years of age, and kept under observation for periods of from three to ten months, ten were immediately cured by one or two courses of peptone-therapy of ten days each, four were cured in over one month, and two at a later period. In these sixteen successful cases the symptoms disappeared completely, without any recurrence.

Treatment of Epilepsy.—E. Morris in a recent report ("Lancet," I, 1926, p. 834) states that he has investigated the treatment of epilepsy in the light of his belief that an important factor in the causation of this disease is the colon bacillus; the one outstanding result of his investigations is the discovery that the power possessed by ammonium bromide of preventing epileptic fits is decidedly raised by administering with this remedy urotropine and citrate of soda. In almost every case of fits under his care he gives two separate prescriptions, as follows:—

(1)	(2)
Ammonium bromide ... 3iv.	Sodium citrate ... 3vj.
Urotropine ... 3ij.	Sig.: One teaspoonful in half
Chloroform water to ... 5vj.	a tumblerful of water night
Sig.: One tablespoonful in	and morning.
water night and morning.	

Under the action of these medicines the fits have so far disappeared. In one remarkable case of hysterioepilepsy, where attacks were occurring at the rate of three to eight a day, and where 20 gr. of bromide, thrice daily, failed to control them, the use of these prescriptions in a short time caused them to cease. No unpleasant after-effects have appeared in any of the cases treated. Further investigation will show to what extent the daily dose of bromide could, in course of time, be reduced.

OPTICS

Blue Lenses and Cataract.—I. Block ("Optical Journal and Review of Optometry," May 20, 1926), after pointing out that heat rays penetrate glass as well as the cornea of the human eye, states that these rays are partly held back by the crystalline lens, but as soon as

they come in contact with the vitreous humor, which is impervious to them, they are thrown back into the crystalline lens. Here they meet the heat rays coming through the cornea, and the excessive heat produced from both points results in an irritation. In its attempt to protect, Nature deposits calcium oxide, which is opaque. The gradual accumulation of this mineral causes total opacity, and a cataract is the result. Upon an examination of the colour spectrum of the absorption properties of different glass, he found that peacock blue absorbed all rays of light below 411 and above 570. As the heat rays begin at 700, peacock blue seemed the ideal glass for cutting out the infra-red. He has prescribed this glass in at least sixty cases of incipient cataract in the last four years, and in not a single instance has the complaint advanced to a point where an operation was necessary.

Colour Vision.—Professor H. E. Roaf ("Lancet," May 22, 1926), in an attempt to investigate the way in which radiant energy is transformed into nerve impulses, endeavoured to understand in what way colour vision is related to the wave-length of light. It was necessary to search for some kind of differential apparatus in the retina, and he set a colour-blind person to copy a coloured diagram by using an ordinary box of paints. He examined twenty-eight cases, and found that in all of them the defect was in the red end of the spectrum. Pigments reflect mixed light, and by cutting out the red end of the spectrum most of the mistakes disappear. Unless radiant energy was absorbed it would not stimulate the nerves, though it does not follow that all the light absorbed would stimulate. He thinks that, on the analogy of chlorophyll synthesis in plants, the colour function might be sought in the cones of the human eye. In the cones of birds, reptiles, and amphibians, there are coloured globules, situated at the junction of the cone and the cone body. Birds have cones which perceive red light only, and cones which perceive red and green, and Professor Roaf's idea is that colour-blindness is due to a deficiency of pigment in minute globules.

Lime Burns of the Cornea.—E. Wolff ("British Journal of Ophthalmology," April 1926) records the successful treatment of two cases of lime burns of the cornea with neutral ammonium tartrate. The eye was cocainised for ten minutes with a 4 per cent. solution, and freshly-prepared 10 per cent. neutral ammonium tartrate slowly instilled with an undine for about fifteen minutes. Ung. atropinae 1 per cent. was put in and the eye tied up. The bathing was done daily. The author asked C. H. Hampshire to try the effect of the ammonium tartrate on calcium carbonate *in vitro*, who writes as follows:—"The action of 10 per cent. ammonium tartrate in the treatment of the cornea seems to be simply a conversion of the insoluble calcium carbonate into the slightly more soluble calcium tartrate, which is washed away.

$$\text{CaCO}_3 + (\text{NH}_4)_2\text{C}_4\text{H}_4\text{O}_6 = \text{CaC}_4\text{H}_4\text{O}_6 + (\text{NH}_4)_2\text{CO}_3.$$
 This reaction takes place slowly, hence the need for the prolonged treatment. I put some calcium carbonate into a 10 per cent. solution of ammonium tartrate, and, after a few days, found that the insoluble powder had been replaced by crystals of calcium tartrate, which, of course, could have been dissolved by adding more water."

Sensitivity of the Eye.—G. H. Pooley ("Lancet," April 10, 1926), in connection with research on miners' nystagmus, has investigated the behaviour of the eye under conditions of dark adaption. Experiments employing special apparatus, and taking an average of several readings by different observers, all of whom had been thirty minutes in a dark room before observations were made, show that the centre of the macula is the most sensitive spot for form and for colour vision in bright light, but as the intensity of the light diminishes the central area in the macula becomes both absolutely and relatively less sensitive to form vision than the area at the periphery of the macula and the adjacent part of the retina. The periphery of the retina appears to be relatively very insensitive to form vision, no matter

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what the intensity of the illumination may be, or whether the eye be light or dark adapted. The threshold point of illumination at which the central area begins to lose its supremacy is between 0.003 candle-power and 0.002 candle-power. When the illumination is below 0.002 candle-power the scotoma is increasingly marked, and the most sensitive part of the visual field is a signet ring-shaped area surrounding the macula at about an angle of 2° , with an extension to 4° at the temporal side. The feebler the illumination the greater is the difficulty in maintaining strict fixation. The eye tends to travel in a small area all round the object it is fixing. This becomes exaggerated into something very like a vertical and even a rotatory nystagmus at times. The arrangement of the different varieties of cones in the retina may account for the phenomena.

Action of Ultra-violet Light on the Eye.—W. S. Duke-Elder ("Lancet," May 29, 1926), in a preliminary report of the experience gained at the Royal London Ophthalmic Hospital, states that the affection which gives the readiest response is ocular tuberculosis. The other disease in which startlingly good results have been obtained is phlyctenular ophthalmia. Cases of infective irido-cyclitis show a 60 per cent. improvement, while the one case of sympathetic ophthalmitis which has been treated improved so rapidly that in three weeks the eye looked quiet and the injection and practically all the keratitis punctata had disappeared. Three cases of choroiditis have been treated. One, a case of many years' standing, showed no apparent change; the other two rapid and marked improvement. In the treatment of diseases of the conjunctiva the reaction aimed at is one of tissue irritation and destruction, and coincidently of bacterial destruction. Chronic catarrhal conjunctivitis, in the two cases treated, cleared up after six and eight sittings, and three cases of trachoma have given most satisfactory results. One case of vernal catarrh showed slow but very satisfactory progress. Corneal ulcers have been found to respond very favourably to treatment by radiation; especially is this so in the case of marginal ulcers. The two cases of hypopyon ulcer so far treated became quite quiet after the third exposure. Phlyctenular keratitis, in addition to being treated with general baths, is much benefited by the local application of light. One striking feature is the almost immediate, although temporary, relief which radiation with the filtered rays brings on in the photophobia and blepharospasm. Interstitial keratitis, to judge from the ten cases treated, is little influenced either by general or by local treatment, although the photophobia is relieved, and the general condition much improved. Acne, on the other hand, responds very favourably to the treatment. In the two cases treated, the distressing and damaging lesions on the cornea were greatly benefited, and recurrences have been so far warded off.

PHARMACOLOGY

Chemotherapy of Acriflavine, Gentian Violet and Mercurochrome.—E. L. Walker and M. A. Sweeney ("Journal of Pharmacology and Experimental Therapeutics," XXVI, No. 6, p. 461) have confirmed (by intraperitoneal injections in mice) the clinical claims that acriflavine, gentian violet, and mercurochrome have a therapeutic action in bacterial infections, but find also that these are subject to important limitations. Gentian violet is effective only in staphylococcal infections. Mercurochrome is more effective against streptococcus than staphylococcus. Acriflavine is more effective against staphylococcus than streptococcus on direct contact, but is wholly ineffective against both types when distributed to the bacteria through the blood stream. All three fail to influence the fatal course of Gram-negative Friedländer bacillus. Their therapeutic action is greatly reduced, if not wholly destroyed, if they are not in immediate contact with the infecting bacteria, an exception being mercurochrome, which is feebly effective in streptococcus infections both subcutaneously and intraperitoneally.

Pharmacology of Benzyl Alcohol.—The results reported by C. M. Gruber ("Journal of Laboratory and Clinical Medicine," January 1926) with the water-soluble benzyl derivatives, sodium benzyl succinate and sodium dibenzyl phosphate, confirm former views that the benzyl esters are extremely unreliable for reducing blood pressure. More than 67 per cent. of the injections of the former and 35 per cent. of the injections of the latter resulted in increased blood pressure. Benzyl alcohol, benzoate and acetate produced rises in blood pressure in 8 per cent. of the injections. If a sufficient dose is given to produce a fall in blood pressure, the first effect on the cardiovascular system appears to be slowing the rate and dilatation of the heart with weakened contraction. The respiratory centre is always the first to be affected, in all injections. Occasionally an asphyxial rise in blood pressure is noted after cessation of respiration, showing that the vasomotor centre has not been paralysed simultaneously with the respiratory centre. Sodium dibenzyl phosphate was found to be more toxic and consequently more depressant to all tissues tested than was sodium benzyl succinate.

Absorption and Excretion of Carbon Tetrachloride.—H. S. Wells ("Journal of Pharmacology and Experimental Therapeutics," 1925, p. 235) finds that the anthelmintic dose (3 c.c.) of carbon tetrachloride is completely absorbed by dogs in twenty-four to thirty hours, the absorption proceeding at an almost constant rate. By comparison with the normal absorption curve, 50 per cent. alcohol does not constantly produce an increase in the absorption of the anthelmintic dose. Ninety-seven per cent. alcohol markedly accelerates absorption during the first two to four hours. Magnesium sulphate produced a slight decrease in the absorption of the anthelmintic dose in three out of four dogs studied. Pathological study shows that the livers of dogs receiving 3 c.c. of the drug by mouth are very badly damaged. When a like amount is injected into isolated intestinal loops the damage is somewhat more severe. Animal experiments indicate that, following the absorption of carbon tetrachloride from the intestine, it is rapidly excreted in the expired air, and a high percentage of the drug passes off in this manner. It is concluded that excretion takes place at the same rate as absorption. In view of the fact that the danger from the absorption of CCl_4 is probably greatest during the first few minutes after it reaches the duodenum, it is suggested that it would be more rational to give a saline purgative immediately, rather than delay this method of removing the remaining drug for several hours.

Sodium Thiosulphate in Metallic Intoxication.—An investigation into the favourable influence of sodium thiosulphate on the toxic effects produced by the administration of arsenical, mercurial or lead compounds was undertaken by H. A. Kuhn and H. H. Reese ("Journal of the American Medical Association," December 5, 1925). The most promising and effective way of administering sodium thiosulphate is by the intravenous injection of a 5 per cent. solution. According to the method of treatment advised by McBride and Dennie, 0.3 gram of sodium thiosulphate is given intravenously; the following day, 0.45 gram; the third day, 0.6 gram; the fourth day, 0.9 gram; the sixth day, 1.2 gram, and the eighth day, 1.8 gram. This is usually sufficient in cases of arsenical dermatitis. However, the authors in the cases reported by them began with smaller doses which were not increased above 1 gram. They never observed any bad effects after even daily injections of 1 gram over a period of fourteen days. Usually it is sufficient, even for severe cases of arsenical dermatitis, to give from five to twelve injections. After the first dose, the redness, oedema and serous exudate usually began to decrease. The authors report several cases of dermatitis exfoliativa, jaundice, and polyneuritis in persons undergoing treatment with neoarsphenamin, as well as instances of acute mercury and arsenical poisoning, in which the administration of sodium thiosulphate was found efficacious. The treatment increases the excretion of arsenic and hastens the restoration of the kidneys to normal.

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Relative Toxicity of Hypnotics.—C. Nielsen, J. A. Higgins, and H. C. Spruth ("Journal of Pharmacology and Experimental Therapeutics," January 1926) have determined the toxicity, efficiency, and safety margin of sixteen hypnotics of the barbituric acid series. It will be seen that some of the newer hypnotics have favourable characteristics.

	Minimum fatal dose in milligrams per gram rat	Ratio of toxicity (Barbitone = 1)	Minimum effective dose in milligrams per gram rat	Ratio of efficiency (Barbitone = 1)	Safety margin (per cent.)
Diethyl-barbituric acid (Barbitone) ..	0.31	1.0	0.225	1	27
Isopropyl-ethyl barbituric acid ..	0.11	2.8	0.09	2.5	18
n-Butyl-ethyl barbituric acid ..	0.19	1.66	0.0625	3.66	67
Iso-amyl-ethyl barbituric acid ..	0.14	2.2	0.0575	3.9	59
Phenyl-ethyl barbituric acid ..	0.14	2.2	0.11	2.0	21
Benzyl ethyl barbituric acid ..					
n-Butyl-isopropyl barbituric acid ..	0.16	2.0	0.0725	3.1	55
Di-n-butyl barbituric acid ..	0.38	0.8	0.20	1.125	47
Di-allyl-barbituric acid ..	0.15	2.0	0.06	3.75	60
Ethyl-allyl barbituric acid ..	0.18	1.7	0.1025	2.2	43
n-Propyl-allyl barbituric acid ..	0.175	1.7	0.072	3.125	59
Isopropyl-allyl barbituric acid ..	0.125	2.5	0.0525	4.25	58
n-Butyl-allyl barbituric acid ..	0.27	1.14	0.075	3.0	72
Isobutyl-allyl barbituric acid ..	0.175	1.7	0.0525	4.25	70
sec-Butyl-allyl barbituric acid ..	0.09	3.5	0.0375	6.0	58
Isoamyl-allyl barbituric acid ..	0.17	1.8	0.085	2.66	50

The order of increasing safety margin is (1) iso-propyl ethyl, (2) phenyl ethyl, (3) di-ethyl, (4) ethyl allyl, (5) di-n-butyl, (6) iso-amyl allyl, (7) n-butyl iso-propyl, (8) iso-propyl allyl, (9) sec-butyl allyl, (10) n-propyl allyl, (11) iso-amyl ethyl, (12) di-allyl, (13) n-butyl ethyl, (14) iso-butyl allyl, (15) n-butyl allyl. The order of increasing toxicity of these barbituric acids is: (1) di-n-butyl, (2) di-ethyl, (3) n-butyl allyl, (4) n-butyl ethyl, (5) ethyl allyl, (6) n-propyl allyl, (7) iso-butyl allyl, (8) iso-amyl allyl, (9) n-butyl iso-propyl, (10) di-allyl, (11) iso-amyl ethyl, (12) phenyl ethyl, (13) iso-propyl allyl, (14) iso-propyl ethyl, (15) sec-butyl allyl. The order of increasing efficiency is: (1) di-ethyl, (2) di-n-butyl, (3) phenyl ethyl, (4) ethyl allyl, (5) iso-propyl ethyl, (6) iso-amyl ethyl, (7) n-butyl allyl, (8) n-butyl iso-propyl, (9) n-propyl allyl, (10) n-butyl ethyl, (11) di-allyl, (12) iso-amyl ethyl, (13) iso-propyl allyl, (14) iso-butyl allyl, (15) sec-butyl allyl.

PHOTOGRAPHY

Arresting Development.—S. O. Rawling ("Photographic Journal," April 1926), who has investigated the three following methods of arresting development: (a) Water Spray, (b) acid fixing bath, (c) acetic acid-alum bath, finds that the acid baths are equally efficient, and that the water spray permits a considerable amount of development to go on after the plate has been taken out of the developing bath.

A New Sensitiser.—M. L. Dundon, A. L. Schoen and R. M. Briggs (Communication No. 255, Eastman Kodak Research Laboratory) state that when kryptocyanine was being prepared it was noticed that the condensation gave rise to a dye less soluble. This was therefore prepared in a pure condition, and when tested was found to be a valuable sensitiser near the infra-red. The dye has been named neocyanine. The best results were obtained by bathing the plates for one minute at 50° F. in a 1 in 200,000 solution of the dye containing 25 per cent. methyl alcohol, followed by an alcohol rinse for thirty seconds and drying as rapidly as possible. Neocyanine was also found to give excellent results in the emulsion, and when hypersensitised with ammonia the plates were equal in sensitiveness to any prepared by bathing and hypersensitising.

Intensification by Dye-toning.—A. and L. Lumière and A. Seyewetz ("British Journal of Photography," March 12, 1926) claim to have worked out a process of intensification which permits not only of obtaining a greater intensification than that given by the most active intensifiers, but it also does not alter the quality of the negative. The latter retains its transparency even in the densest parts. Moreover, the facility of reducing the intensified image and of altering its colour for the purpose of obtaining different results in printing confer upon this method of intensification advantages which are not possessed by any of the known processes. For the mordanting of the silver a bath having the following composition is used:—

Copper sulphate	40 gm.
Potassium citrate (tribasic)	60 gm.
Acetic acid (glacial)	30 gm.
Ammonium sulphocyanide (dissolved separately)	20 gm.
Water	1,000 c.c.

The negative, dry or wet, is mordanted for from three to four minutes in this bath and then washed for ten minutes. It is then dyed by immersion for about fifteen minutes in a mixture of 1 per cent. solutions of the following dyes, with the addition of 1 per cent. acetic acid:—

Methylene blue	287 c.c.
Rhodamine S	333 c.c.
Phosphine M, patent extra concentrated	380 c.c.

and given a final washing. The intensified image may be reduced and even brought back completely to the original intensity by treatment with the following weak solution of acid potassium permanganate:—

Potass. permanganate	1 gm.
Sulphuric acid	5 c.c.
Water	1,000 c.c.

This solution bleaches the three dyes; the bleaching action may be stopped at any convenient stage and the negative then washed.

Desensitisers which Sensitise.—H. Stammreich and H. Thüring ("Zeitschrift für wissenschaftliche Photographie, Photophysik und Photochemie," October 1925), have investigated whether desensitisers, such as dyes which function as colour sensitisers, exert their action only over a certain zone, or whether their action is independent of the wavelength of light. The dyes and the concentrations used were as follows:—Methyl green (1:100,000), Nile blue, 2B (1:1,000,000), safranin (1:1,000,000), phenosafranin (1:1,000,000), tetramethyl-safranin (1:1,000,000), flavindulin (1:1,000,000), neutral red (1:100,000), rosindulin, 2G (1:10,000), indulin scarlet (1:1,000,000). It was found that the greatest desensitising action of the dyes, even in the case of colour-sensitised plates, is in the ultra-violet and blue, the density in the red being so small that it is hardly possible to recognise a reduction of sensitiveness. The azines, with the exception of rosindulin, which possesses scarcely any desensitising properties compared with other dyes, exhibit a gradual increase in their action from neutral red to indulin scarlet, flavindulin being the most active of the three. Of the three dyes, flavindulin desensitises orthochromatic plates best. Among the safranines, ordinary safranin and phenosafranin have about the same desensitising effect as flavindulin. As also in the case of this latter, they show their least effect when used on panchromatic plates, with which they desensitise only in the region of sensitiveness up to about 500 μ . From experiments it is concluded that next to Nile blue 2B, tetramethyl-safranin is the best desensitiser in practice. A high degree of desensitisation is obtained with a very small concentration of the dye, and the action, unlike that of other dyes, is very well exerted over the whole region of sensitiveness of a panchromatic plate. Several dyes used, in addition to exhibiting their desensitising effect on ordinary plates, show the remark-

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able property of increasing the sensitiveness towards the less refrangible rays of the spectrum of plates which had been colour-sensitised. To ascertain to what degree this phenomenon depends upon the concentration of the dye solutions used, the authors prepared erythrosin bathed plates with methyl green of strengths from 1:10,000 to 1:1,000,000. For comparison they prepared several erythrosin plates with crystal violet in concentrations from 1:25,000 to 1:1,000,000. The greatest additional-sensitising action of methyl green is obtained at a concentration of about 1:100,000, at which strength the colour sensitiveness of a plate prepared with erythrosin is raised to about double. Crystal violet at a concentration of about 1:200,000 has approximately the same effect as methyl green, but the zone of sensitiveness of plates treated with it extends considerably further into the red (to about $650 \mu\mu$) than the plate sensitised with erythrosin. This property belongs not only to methyl green and crystal violet, since Nile blue and phenosafranin exhibit this additional-sensitising with orthochromatic or panchromatic plates, as do many dyes which desensitise the ordinary plate.

VETERINARY MEDICINE

Keeping Cattle in a Tsetse-fly Belt.—H. E. Hornby and W. A. Burns ("Journal of Comparative Pathology and Therapeutics," March 1925), as a result of their experiments in Tanganyika Territory, consider that by means of fortnightly injections of tartar emetic cattle can be kept alive in a fly-belt for a number of months without losing much condition. No advantage is obtained when Bayer 205 is added to the tartar emetic. A summary of the experiments is as follows:—Ten bulls were put into a thick fly area near Shinyanga and six were dead within three months, and none survived eight months. Of ten bulls put in the same fly-belt, but injected every fortnight of the first five months with 1 gm. of tartar emetic, only two died within seven months; the remaining eight were in a marketable condition, though infected with trypanosomes, at the end of that period. Of ten bulls put in the same fly-belt, but injected every fortnight of the first five months with a mixture of 2.5 gm. of Bayer 205 and 1 gm. of tartar emetic, three were dead within seven months. Of the survivors at the end of that time, one was very ill, but the remaining seven were in a marketable condition, though infected.

Lice in Mice.—A. Compton ("Veterinary Journal," May 1925), who calls attention to the seriousness of an outbreak of this condition to the breeder and the laboratory investigator, points out that many of the remedies used for lice destruction in larger animals are impracticable of application in the case of mice. After trying a number of substances for this purpose a test was made with salicylidene *m*-toluidine and salicylidene *p*-amino benzoic acid. Following painting with a 1 per cent. alcoholic solution of the former substance the mice were observed next day to be remarkably lively and clean. This compound being very soluble in petrol, it was decided to try the effect of using a petrol solution. In this form, working with a 1 per cent. solution, a preparation of undoubted efficacy for the treatment of lice infection was obtained. The second compound being less soluble, a saturated solution (about 1 per cent.) made in a mixture of equal parts of alcohol and petrol, was used. It yielded equally good, or even better, results. The treatment can be carried out as follows:—With a small cotton-wool swab, affixed on the end of a metal rod and moistened with the solution, the affected animals are painted daily, as occasion demands, over the sites where the lice are observed to lodge: the forehead, around the eyes, the back of the neck, especially behind the ears, and as frequently as not over the entire body. The mice support this treatment apparently quite well, the alcohol and the petrol evaporating off very quickly, leaving their coats stained slightly yellow by the phototropic substances.

Asafetida as a Wound Dressing.—C. M. Ahmad ("Veterinary Record," May 22, 1925) finds that asafetida is successful in keeping flies off a wound, and its continual use as a dressing proves it to be an excellent antiseptic. The following preparations are used in the treatment of wounds:—

Alcoholic Solution

Asafetida 1 part
Rectified or methylated spirit ... 7 parts
Dissolve and filter.

Aqueous Solution

Asafetida 1 part
Spirit 2 parts
Water, boiled ... 10-20 parts
Dissolve the asafetida in the spirit. Add the hot water gradually; when dissolved, filter. The solution should be freshly prepared.

Glycerin Solution

Alcoholic solution 1 part
Glycerin 4 parts
Shake well.

Ointment

Asafetida 1 part
Spirit $\frac{1}{2}$ to 1 part
Simple ointment ... 6 parts

Details are given of seven successful cases treated with asafetida. It is advisable that the operation wound should be dressed before and after suturing. In recent or chronic suppurating wounds, its application, after cleaning the wound with warm water, stops the formation of pus. It stimulates indolent ulcers to granulate. In fresh wounds and burns of any kind its application inhibits suppuration and healing occurs rapidly. A glycerinated solution, applied to broken knees and other wounds of the joints, hastens the healing of the wound and keeps the skin soft and pliable. In punctured wounds with efficient drainage provided, it may be injected by means of a syringe. Cotton wool pads, saturated in an aqueous solution, are placed on infected wounds. The application of the alcoholic or aqueous solution produces a whiteness on the surface of the wound or ulcer. When using an alcoholic solution, a film of resin remains on the granulating surfaces, which serves to protect the wound from dust, etc., and also hastens the reparative process. This film, which may be regarded as an aseptic scab, need not be removed daily as long as there is no discharge of pus. By the application of its aqueous solution there is produced a thin, serous discharge that brings out the deep infection and coagulated lymph, which helps the separation of the slough in three to six days. When the slough is ready for separation the wound smells. After the removal of the slough there appear healthy granulations which were hidden under the dead tissue. The slough should be removed very carefully so that the granulations may not get injured and fresh infection may not take place.

CHEMICAL DIFFERENTIATION OF RACES.—E. O. Manoiloff ("Münchener medizinische Wochenschrift," December 18, 1925) describes a series of tests undertaken on the blood of Jews, Russians, and Ukrainians. One drop of a 1 per cent. alcoholic solution of methylene blue was added to 3 c.c. of a 3 to 5 per cent. emulsion of blood cells, obtained from the subject under examination, and after stirring, 5 drops of a 1 per cent. alcoholic solution of cresyl-violet, then 3 drops of a 0.5 to 1 per cent. solution of silver nitrate, 1 drop of a 40 per cent. solution of hydrochloric acid, and 3 to 5 drops of a freshly prepared aqueous 1 per cent. solution of potassium permanganate were added successively. The author found that the cresyl-violet disappears in the blood taken from Jews, which becomes blue, while the fluid remains a bluish-red with blood from Russians. He had 187 correct results in 202 tests. Manoiloff found differences even between the blood of Russians and Ukrainians. The children from mixed marriages (father Russian, mother Jewish, Polish or Armenian) gave a faster reaction than pure Russians. No difference from the Russian was noted in children from inter-marriage between Russians and the German or yellow race. These differences are attributed to the greater speed of oxidation in Jewish blood as compared with the Russian.

Personalities

MR. JOHN O. OLIVER, M.R.C.S.; L.R.C.P., son of Mr. John Oliver, chemist and druggist, Stowmarket, has passed the final examination for the M.B. B.S. degrees of the University of London.

MR. J. M. MOOKERJEE, senior partner of O. N. Mookerjee & Sons., chemists and druggists, Calcutta, who have been established over fifty years, is in London. He is staying at the Cosmo Hotel, Southampton Row, W.C.1.

MR. BENJAMIN BROOKS, F.R.G.S., on the completion of twenty-one years' service in the advertisement department at the chief offices of Burroughs Wellcome & Co., London, E.C.1, has been presented with a morocco-bound copy of "The Times" Atlas.

MR. I. HALABY, manager of A. Halaby & Bros., chemists and druggists, Damascus Gate, Jerusalem, is now on a business visit to Europe with a view to placing orders for drugs, chemicals, pharmaceutical preparations, chemists' sundries, toilet requisites, etc. Communications should be addressed to him, c/o Bedford Petroleum Co., Nujol Dept., 88 Avenue des Champs Elysées, Paris.

DR. G. CLARIDGE DRUCE, Oxford, has just been elected Vice-President of the Oxfordshire Archaeological Society, of which he has been one of the honorary secretaries for many years. Dr. Druce has recently been representing Sir J. Treacher (Mayor of Oxford in the reign of George III) at a pageant at Headington Hill Hall. The pageant was a great success, in spite of untoward weather.

MR. JOSEPH J. RIPPIN, familiarly known in Mincing Lane as "Joseph," a director of Marshall, French & Lucas, Ltd. (late Marshall & French), colonial and general produce brokers, 4 & 5 Fen Court, E.C., completed fifty years' service with the firm on June 22. In commemoration of the event he was the recipient of a suitably inscribed silver salver presented by the principals, Messrs. H. P. Lucas and E. P. Smith.

An interesting swimming match took place at the Corporation Swimming Baths, Brighton, on June 20, between H. R. Cox, Brighton Swimming Club (Arthur H. Cox & Co., Ltd., Brighton), and Assistant Commander Jack Weale, Calcutta Baths, champion swimmer of his section of the Mercantile Marine. A closely contested race finished with H. R. Cox the winner by half a second. At the same time Mr. Cox broke the record for a length in the bath, the 40 yards being covered in 22½ seconds, against the world's record in the same bath of 23 seconds. Mr. H. R. Cox, who is the son of the chairman of Arthur H. Cox & Co., Ltd., holds many swimming records, including that of the junior champion of Sussex, and was the captain of the Brighton College Swimming Club last year.

Wills

MR. ARTHUR MCEWAN, chemist and druggist, 25 Clarkston Road, Cathcart, Glasgow, who died on January 28, left personal estate in Great Britain valued at £1,945 16s. 11d. Probate has been granted to his widow, Mrs. Maggie Nicol McEwan, 3 Doune Gardens, Cathcart.

MR. JOHN STUART, C.B.E., 3 North Side, Clapham Common, London, S.W., and Stonehurst, Ardingly, Sussex, proprietor of "The British Journal of Photography," who died on April 28, left property of the value of £56,917 2s. 10d., with net personalty £39,447 5s. 9d. Among the bequests are £1,000 to the Royal Infirmary, Edinburgh; £1,000 to King Edward's Hospital Fund; £1,000 each to George Edward Brown and Alfred Walter Brooks, "for the long, loyal and able manner in which they have conducted 'The British Journal of Photography' and the Almanack and my pleasant and friendly association with them"; £100 to John William Aplin and £50 to Herbert Samuel Mills, if still in the employ of Henry Greenwood & Co., Ltd.; and a number of smaller legacies to persons in the employ of Henry Greenwood & Co., Ltd., Ross, Ltd., and of himself. He also gave 1,000 shares in Ross, Ltd., to Sir Herbert Jackson.

Births

Notices for insertion in this column must be properly authenticated.

MCCLELLAND.—On May 28, the wife of J. D. McClelland, Ph.C., Randalstown, of a daughter.

SMITH.—At Clifton House, 68 Ashbourne Road, Derby, on June 18, the wife of Clayton Smith, M.P.S., of a son.

Marriages

CRICK—SPINK.—At St. John's Church, Margate, on June 3, Arthur Crick, Ph.C., proprietor of Stonham & Son, chemists, Maidstone, to Elizabeth Spink, O.B.E., late Matron of Margate Cottage Hospital.

PARKINSON—COUPE.—At Burnley, June 23, Allan Rycroft Parkinson, B.Sc. (R. Parkinson & Sons, wholesale and retail chemists, Curzon Street), to Mary Coupe, youngest daughter of Mr. A. Coupe, Pendlehurst.

SNEESBY—ADAMSON.—At St. Clement's Church, Fulham Palace Road, London, S.W., on June 7, Frank Sneesby, chemist and druggist, Ealing, W.5, to Charlotte Brockie Adamson.

WHITWORTH—UTTLEY.—At St. Mary's Church, Elland, on June 15, Sam Edward Helliwell Whitworth, chemist and druggist, to Muriel Alwyn Uttley.

Deaths

EATON.—At Porlock, on May 26, Mr. Walter Eaton, chemist and druggist, aged sixty-four.

ELLIS.—At Loddon, recently, Mrs. Ellis, widow of the late Mr. T. W. Ellis, chemist and druggist, aged eighty-eight. After her husband's death in 1900 Mrs. Ellis continued the business for twelve years, and then disposed of it to Mr. F. Larder, chemist and druggist. For more than twenty years she acted as organist at the parish church.

HEPTINSTALL.—At Sheffield, on June 2, Mr. Ralph Heptinstall, aged twenty-five.

HEWITT.—At his residence in Edge Hill Road, Nether Edge, Sheffield, on June 16, Mr. John Parkin Hewitt, retired chemist and druggist, aged eighty-one. Mr. Hewitt was the son of a chemist at Westbar Green. He was educated at York, and commenced business at 66 and 68 Division Street, Sheffield, in 1864. On his retirement twenty years ago his son, Mr. C. H. Hewitt, chemist and druggist, succeeded him. Mr. Hewitt was the oldest member of the Wentworth Lodge of Freemasons, and was Worshipful Master in 1884. He was also a Past Provincial Grand Deacon of West Yorkshire and a Past Z of the Milton Chapter of the Royal Arch Masons. For twenty-five years he was in the old 1st West Yorks Engineer Volunteers (later absorbed in the Territorials), and left them with the rank of Staff-Sergeant. Mr. Hewitt is survived by two sons and two daughters.

INGRAM.—At 70 King Edward Road, Maidstone, on June 18, Mr. George Thomas Ingram, for many years dispenser at the West Kent General Hospital.

LYCETT.—At Leamington Spa, on May 31, Mr. Herbert Lycett, Ph.C. Mr. Lycett passed the Major examination in 1899.

SADLER.—At Peterborough, on June 5, Mr. Claud William Sadler, chemist and druggist, aged twenty-five.

DERMATITIS FROM "STRONG SODA WATER."—The Shore-ditch County Court Judge, at the sitting on June 22, declined to vary a decision given by the registrar in a case in which a potman claimed an award under the Workmen's Compensation Act. It appeared that on two occasions the plaintiff had contracted dermatitis through using "strong soda water" in the course of his employment, and had been certified unfit for work. The registrar refused to sanction, on the ground of inadequacy, an offer made by the man's employer.

Trade Notes

BOXALL & Co., Khartoum, Sudan, are first-hand shippers of acacia gums.

RONOLEKE HOT-WATER BOTTLES.—In view of the approach of autumn, Campbell, Achnach & Co., Ltd., Glasgow, announce that a Press campaign relating to the Ronoleke hot-water bottles will begin in September. The bottles are obtainable from all wholesale houses.

PROPRIETARY MEDICINES CONTAINING POISON.—Francis Newbery & Sons, Ltd., 27 & 28 Charterhouse Square, London, E.C.1, have issued a revised list of proprietary medicines affected by the Labelling of Poisons Order. A few copies of the list are available to chemists who have not already received one.

CLOSED FOR STOCKTAKING.—Francis Newbery & Sons, Ltd., druggists' sundriesmen, Charterhouse Square, London, E.C.1, inform us that their offices and warehouses will be closed from Monday evening, June 28, until Thursday morning, July 1. Orders received on June 28 will be dispatched, but invoiced for July.

SHEEP-DIPS.—Tomlinson & Hayward, Ltd., Lincoln, are advertising in this issue the Yellow Paste Dip which was introduced many years ago as the first cold-water arsenical sulphur dip. This has now been passed by the Ministry of Agriculture and Fisheries as suitable for use as a first dip. Their non-poisonous fluid has also been approved for the second dip.

ENDOCRINE PREPARATIONS.—Thompson & Capper, Ltd., Manesty Buildings, College Lane, Liverpool, are wholesale distributors of the products of Endocrines, Ltd., and E. H. Spicer & Co. These include Harrower's standardised solutions (polycrines and monocrines), Harrower's Pluriglangular formulas in sanitabs, and *B. acidophilus* emulsion. A map in the advertisement shows the district covered by Messrs. Thompson & Capper.

ILLINGWORTH'S FILMS.—Thomas Illingworth & Co., Ltd., Park Royal, Willesden Junction, London, N.W.10, send us specimens of the advertising show matter that is being issued in connection with the "Sunny Smile" snapshot competition connected with Illingworth's films. These comprise a cut-out showcard, window bills, window slips and pamphlets giving the details of the scheme. Weekly prizes are given up to the week ending September 11.

JAMES BURROUGH, LTD., Cale Distillery, Lambeth, London, S.E.11, are no longer acting as distributors for the Methylating Co., Ltd., who are concentrating their London business at one dépôt at Morgans Lane, Tooley Street. Messrs. Burrough wish to emphasise the fact that this applies solely to methylated spirit and finish, the company maintaining their large business in rectified spirit, absolute alcohol, methyl alcohol, wines and spirits.

KELLY'S WORLD DIRECTORIES.—The fortieth edition of "Kelly's Directory of the Merchants, Manufacturers and Shippers of the World" has just been issued from 186 Strand, London, W.C.2. The two volumes (price 64s., post free) contain about 5,000 pages, and are full of valuable information to the business man. Volume 1 deals with foreign countries and volume 2 with the British Empire, more than one and a half million names and over 20,000 places being dealt with. That the task of correction and revision has been arduous may be judged from the fact that in order to bring a page of the 1925 edition up to date it has been necessary to alter 50 per cent. of the names on that page.

Information Department

INFORMATION WANTED

Postal or telephone information with respect to makers or first-hand suppliers of the undermentioned articles will be appreciated:

G/176. Acetoarsen	N/196. Maynell nail brushes
H/236. Azone deodorant	M/176. New Century feeding bottles
Q/156. Blanchard, for surgical instruments	S/156. Non-metallic collapsible tubes
A/236. Churchill's Syr. Phosph. Co. (London supply)	E/196. Oryzone solidified brilliantine
M/176. Cyanocoprin	S/176. Phenolbarbitol
M/186. Enterostavin	R/216. Pompadour nail stick
M/176. Gripwell teats	B/186. Seymour's liquor papain
B/186. Klensoil	

Westminster Wisdom

Notes on Parliamentary Matters

THE VINEGAR BILL

This Bill came up on June 21 for consideration after amendment in committee, but, owing to objections, consideration was deferred.

BEET SUGAR SUBSIDY

The Minister of Agriculture stated in the House of Commons, on June 21, that during the 1925-26 manufacturing season the quantity of white granulated sugar for direct consumption produced at the beet sugar factories was 897,892 cwt. In addition, 128,513 cwt. of beet sugar was produced at the factories for further refining. The total subsidy paid to date in respect of last season's output of beet sugar is £1,002,382.

INSURANCE SPECTACLE SUPPLY

Mr. Hannon asked the Minister of Health, on June 17, whether he is aware that certain approved societies have made arrangements with the Joint Council of Qualified Opticians and the National Association of Opticians for the supply of spectacles to their members; and whether he will see that the free choice of an optician by members is not interfered with?

Mr. N. Chamberlain: I am aware that some approved societies have made arrangements with organisations of opticians for regulating the quality and price of optical appliances to be supplied to members of the societies who are entitled to ophthalmic benefit as an additional benefit under the National Health Insurance Scheme. Having regard to the fact that at present it is open to any person to supply spectacles to the public although possessing no particular qualifications, I see no reason, as at present advised, to interfere with arrangements which are designed to protect the interests of insured persons by securing that articles of a satisfactory quality shall be obtained at a reasonable price.

VENEREAL DISEASE ACT (1917) AMENDMENT BILL

The following is the text of the Bill introduced last week (*C. & D.*, June 19, p. 821) to permit the sale by chemists of disinfectants for protection against venereal disease, and for other purposes relating thereto.

Be it enacted by the King's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

1. *Amendment of 7 & 8 Geo. 5, c. 21.*—Notwithstanding anything contained in the Venereal Disease Act, 1917, it shall be lawful for all properly qualified chemists to sell approved disinfectants for use as a measure of protection against the risk of infection with venereal disease, provided that such disinfectants are sold accompanied by approved instructions for use.

2. *Provisions as to Issue of Disinfectants.*—The disinfectants sold and the instructions for use shall be issued under the authority of a Committee nominated by the Royal College of Physicians and the Society of Medical Officers of Health.

3. This Act may be cited as the Venereal Disease Act (1917) Amendment Act, 1926.

Recent Patents

Abstracts of specifications of recently-granted patents for inventions. The complete specification (i.e. each including postage) of any British patent can be obtained from the Patent Office, 25 Southampton Buildings, London, W.C.2, on quoting the name of the patentee and the number of the patent.

Manufacture of Quinine.—Cinchona bark is treated with a suspension of calcium oxide in water, and the alkaloids extracted with alcohol. This alkaloidal solution is filtered, the alcohol removed, and the residue dissolved in a mixture of water and sulphuric acid. The alkaloids present as by-products are precipitated by the addition of a solution of sodium hydroxide of definite concentration, heating the mixture in a closed vessel. After filtering and cooling, pure quinine sulphate separates from the filtrate. (Aktiengesellschaft Chemischer Werte, 251,526.)

Observations and Reflections

By Xrayser III

A Cordial Welcome

should be extended to the new edition of "The Art of Dispensing," a work with which it has been my privilege to be practically conversant ever since it first appeared, some thirty-eight years ago. More, I can well remember reading with avidity the articles which presented the work in a probationary form in *The Chemist and Druggist Diary*, and later preserving the precious pages for purposes of reference. Most of the eminent pharmacists who contributed those articles became personally known to me during succeeding years, and I can vouch for the remarkable attainments of all of them. Their views on particular points in connection with the dispensing of medicines sometimes disagreed, but this only went to prove that there were alternative methods of securing certain results, and that it was the personal skill and knowledge of the individual which counted for most in accomplishing what was required.

The New Edition

has already been through my hands, and I am delighted to find how different it is while still remaining the same. By this paradoxical statement I mean that "The Art of Dispensing" is now virtually a new book, improved in general appearance, in contents and in every possible way; but it continues to reveal the traces of its descent, and one can proceed to use it for reference purposes with all the familiarity that attaches to long acquaintance. Big men as were the originators of the work, they have worthy successors in the modern producers who can introduce so much originality into a publication that it would have been difficult to rival at any time during the past forty years. This is all to the good, because information such as is contained in the book is more needed than ever, by practising pharmacists and pharmacists-to-be.

What a Change

has come over the scene at the Pharmaceutical Society's headquarters! No one seems to have expected that there would so soon be a change in the presidency; but the unexpected has happened in this respect, and now Mr. Bilson, of Bournemouth, gets his opportunity of showing what he is made of. Let us hope he will prove a good fighter, capable of presenting our case to Government bureaucrats in a way that will command respect and attention. Mr. Herbert Skinner, now in the vice-chair, is well known as a sportsman and a stickler, and I regard his appointment as a happy omen of something better to come in respect of relief from tormenting worries. The new secretary and registrar is a young man for the post, but I am told that he has already won golden opinions and that he appears to shape even better in charge than as a subordinate. I hope to learn that he is expected to give his whole time to the work, since the policy of part-time appointments has not proved an unqualified success. To my certain knowledge many members of the Society have been restive for some time past because they had to deal with assistants and deputies instead of the officer actually in charge.

Postponed Events

are usually things to avoid because they tend to disappoint the anticipations roused by the deferred originals. Judging, however, from your report of the proceedings at the formal opening of the Pharmacological Laboratories at Bloomsbury Square, this event has not suffered from postponement. Everything was lovely in the garden, according to the slang phrase, the Minister of Health was duly impressed by the Society's magnificent disregard of lack of dividends, and the best was made of the opportunity of securing a fine advertisement which ought to impress the Whitehall bureaucrats. Whether it will or not remains to be seen, but of one thing I am positive. It is going to be necessary to strain every nerve in the effort to maintain the Pharmaceutical Society in the position of which its supporters have been so proud during the past eighty odd years, and it will require something more than unremunerative expenditure on new laboratories to save the situation.

"Some Curiosities of Clinical Medicine"

was a paper written by Dr. C. E. Shelly which appeared in the "Lancet" recently (April 17, 1926). In it there is a reference to cascarilla which reminded me of my early days at the counter, when this drug was occasionally sold in small quantities for the purposes of "smoking." Dr. Shelly says that several years ago he "learned that the Romany boy learns to smoke without passing through that unpleasant phase of discomfort and distress which is usually a vivid experience in the case of his Gorgio contemporary. The relief is secured to the gipsy boy by mixing with his tobacco a small amount of a certain brown powder procured at a price from the wise women of his tribe. Of course, its use has to be combined with certain mystic rites and incantations. This powder proved to be "roughly comminuted cascarilla bark." Dr. Shelly followed up the suggestion contained in this practice of smoking cascarilla, and he found that the drug not only affects the pulmonary branch of the vagus nerve, but its cardiac and gastric branches also, and he gives clinical experiences to show its usefulness in certain forms of influenza. The interest of Dr. Shelly's experience lies, as far as this page is concerned, in his confirmation of the belief that it is never safe to discard any drug which has any substantial record of usefulness, even if its record is altogether empirical. When Professor Stisser, of Helmstedt in Brunswick, wrote of this drug (which was then called *cortex eleuterii*), in 1693 he said it had been introduced to him by a person of distinction, just returned from England, who informed him that it was used there for mixing with tobacco to improve its aroma. Dr. Shelly's clinical work now throws a clearer light upon the reasons why it was employed by smokers to whom tobacco, *pur et simple*, was not altogether acceptable, and confirms the opinion of Stisser that it corrected the poisonous and narcotic effects of the tobacco.

The Discovery

of the Epsom mineral water, at the beginning of the seventeenth century, inaugurated an era in the social habits of this country which has continued to this day. The medicinal springs, which previously had been frequented by the sick and maimed under the direction of ecclesiastics who extolled the miraculous virtues of the springs, then acquired associations of an entirely different character in the way of the provision of balls, raffling shops, music, and gaming saloons. The English spas became more famous for their pleasures than their cures. Revived interest in the Sadler's Wells theatre reminds one that London also patronised spas after the fashion of Epsom and Tunbridge Wells, and that Sadler's Wells is perhaps the best remembered of them. Its place in the history of London has been continuous down to this day. For over two hundred years it has contributed to the convivialities of the metropolis. But before the time of Sadler, whose workman rediscovered the spring in 1683, the holy well had been the property of the priory of St. John's, Clerkenwell. The priests, we are told, extracted money from the people by ascribing the virtues of the water to the efficacy of their own prayers. At the Reformation this state of affairs came to an end by the closing of the well on the mandate of the Government. When Sadler came into possession of the place he renewed the concerts, which were apparently a feature of the establishment in the latter portion of the old régime, and made it into a "summer theatre." Sadler was alive to the advantages of advertising, and persuaded, probably for a consideration, a well-known physician, Thomas Guidott, to write a treatise on the medicinal virtues of the water. Guidott was an authority on such matters. He was a practising physician of Bath, and had written a work on the Bath waters ("A Discourse of Bathe") in 1676 (*C. & D.*, II, 1924, p. 923). The pamphlet on Sadler's Wells appeared in 1684. The writer said that the water was a chalybeate one similar to that of Tunbridge Wells. He expended some praises upon it to the effect that it was neither offensive nor unpleasant to drink; that it might be taken with a few caraway comfits, some elecampane or a little preserved angelica to comfort the stomach; and a glass of Rhenish or white wine might also accompany it.

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Editorial Articles

Compiling a Pharmacopœia.—VI

THE best reason for changes in a new Pharmacopœia is that of Mr. G. D. Rosengarten, of the U.S.P. Revision Subcommittee on Organic Chemicals, who emphasises the fact that "*progress is synonymous with change*," a dictum which is equally applicable in this country to both our Pharmacopœia and the methods for revising it. Pharmacopœia descriptions of chemicals and chemical assay have perhaps led to more controversy and recrimination regarding editing a Pharmacopœia than any other section of an official guide to the purity of chemicals and drugs. This is somewhat surprising considering the definiteness with which the properties of chemical products can be described. The difficulty is one of language in making statements requiring precision. Consequently such a question as the "slight turbidity" which may or may not be produced on the addition of a test solution immediately brings forward the question of the degree of turbidity, a matter which can only be settled by comparison with specific standard conditions. Even so, nephelometry, or the measure of turbidity, requires attention to many minutiae of technique to be of true value in assay processes. Variation in temperature, concentration of test substance and reagent, presence of impurities, and other conditions of precipitation affect grain size (and opacity), or may possibly prevent precipitation. Hence the need as in the U.S.P.X. for specifying definite quantitative turbidometric tests, which a retail pharmacist would find difficult to apply. However, there is nothing objectionable to the testing of pharmacopœial chemicals becoming wholly relegated to the chemical manufacturer's laboratory, because ordinarily, unless these are subjected to routine tests, the trouble and cost of subsequent test is sufficiently prohibitive to prevent small buyers from ascertaining whether their purchases are of standard quality. The integrity of British producers of chemicals has encouraged retailers to rely upon "guarantee" in preference to "testing" after delivery. Hence there is much in favour of relegating all details of test solutions and assays to appendices to the Pharmacopœia proper, and to include under each monograph the required standard of purity and the permissible limits of impurities. The need for continued co-operation of the manufacturer of medicinal preparations in compiling a Pharmacopœia has not been sufficiently realised by the Pharmacopœia Committee of the General Medical Council. The good work done by Mr. J. C. Umney in publishing standards for alcoholic content and extractive of galenical preparations was never sufficiently utilised, so that the accumulated results of variation in raw materials or in finished products (which in combination only permit real standards to be formulated) are now seldom made public, though they are in everyday use by the manufacturer of galenicals as a check on the accuracy of workmanship of his employees. How easy it is to set up standards and how difficult it is without previous experience to ensure that they are applicable in practice as well as in theory is exemplified by Liquor Cresolis Compositus, U.S.P. The new assay process for ensuring the correct-

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ness of this compound solution of cresol includes not only determination of the proportion of cresol present but also testing of its distillation range to ascertain whether U.S.P. cresol was used in its preparation. Already Mr. E. L. Griffin, a Government chemist in the U.S. Bureau of Chemistry's Insecticide and Fungicide Laboratory, reports that the cresols recovered with the U.S.P. method of assay contain a large proportion of potassium, probably as potassium cresylate, which leads to erroneous results on distillation, some 30 per cent. remaining as residue in the distilling flask. The error thus introduced is eliminated if dehydrated copper sulphate replace ignited potassium carbonate for drying the cresol separated in the official assay process. To prevent similar occurrences it is necessary not only to adopt a method of assay which had been already tried out practically, but one which gives concordant results in different laboratories on products made under commercial conditions. It must be admitted that the outlook for such help from the manufacturers of galenicals is unpromising, and a great change in their attitude towards pharmacopœial authority will be required before this is forthcoming, a state of affairs for which the General Medical Council is greatly to blame. Indeed, it is difficult to see how any of the enormous advances made in chemical knowledge can be applied in the next British Pharmacopœia unless some radical change occurs in the attitude of manufacturing chemists and druggists towards Pharmacopœia revision. Thus there is the question of the proper "indicator" to use for assay of acids, alkalis, or alkaloids, and their limitations in accidental buffering, such as may occur with carbon dioxide. It will be necessary, however, to set up quite a number of new standards in any forthcoming B.P., and these will call for knowledge both of analytical technique and natural limitations in products, whether of natural or synthetic origin. The ester number of an essential or fat oil is an example of the complexity of the problems raised, which at once bring out that any body of opinion concerned in setting up national and legal standards should have official sanction and recognition. There is, however, something to be thankful for in the inherent conservatism of the Britisher as regards Pharmacopœia revision compared with the "thoroughness" of his American cousin, because the latter is resulting in the appendix to the U.S.P. becoming a collection of physico-chemical conversion tables. The U.S.P. Committee of Revision apparently found a great satisfaction in declining to "express the viscosity of liquid petroleum in terms of an arbitrary unit," but to use instead "the more scientific unit of kinematic viscosity, which is based on absolute viscosity." What is the difference between an "arbitrary unit" of a standard instrument and an "arbitrary definition" of viscosity may be left to the pedant, so long as the U.S. compilers are satisfied by including what the subcommittee's Report describes as a "conversation" table, which allows the viscosity to be determined by such instruments as are in general use. At any rate, it is obvious that revision of identification tests for chemicals and of assay processes for chemical products calls for renewed co-operation between pharmaceutical and pharmacological authorities. For example, there is the question whether aconite should be assayed by tests on animals in preference to alkaloidal assay, owing to the ready decomposition of aconitine into inert alkaloidal derivative. There is, furthermore, a matter as to what represents the active principles of *strophanthus* and of *digitalis*, and as to whether better methods of preparation as well as standardisation cannot be devised. It is to be hoped that a first outcome of the Pharmaceutical Society's Laboratory for Physiological Testing will be a resumption of research on these lines, and that this will include co-operative

effort with manufacturers in general. Again, the assaying of pepsin and pancreatin call for reconsideration, and the use of endocrine glands (especially thyroid and pituitary) on an extended scale calls for accurate pharmacopœial definition. It is difficult to comprehend why professional men in both medicine and science are unable to realise the advantage of seeking for knowledge on such therapeutic products at its source instead of relying almost entirely on laboratory work, which frequently relates to changed or decomposed material. The time is coming when it will be realised that industry and commerce does not contaminate "pure" science, but adds to the lustre of its laurels by turning, as with insulin, a scientific curiosity into a remedy available for use in succouring suffering humanity. The new aspects of biochemistry are ousting academical science, but the benefits thereof can only accrue to medicine by an effective co-operation between medicine and pharmacy, such as that provided between the Medical Research Council and the manufacturers of pharmaceutical products. This beneficent example can be commended to the General Medical Council both for precept and practice.

The Turpentine Market

THE circumstances under which a heavy exhaustion of the reserve stocks of turpentine oil in London became inevitable were fully explained in our issue of April 3 last (pp. 493-4), when the position was reviewed. Obviously this exhaustion, which since assumed still larger dimensions, has had an important bearing on the aspect of the market. This fact, however, has not aroused much interest or support in the way of new forward speculative enterprise on the part of dealers, but at the same time a decidedly more stringent market developed for spot spirit, which is now at a premium of about 10s. per cwt., compared with the terms ruling for July-December contracts, in regard to which offerings have been made on a liberal scale. On April 3 last the London stocks were a little over 30,000 barrels, but by June 12 they had declined to 10,659 barrels. This was due to continued heavy deliveries from London in order to meet Continental requirements. It is surmised now that probably the worst of the serious squeeze in spot spirit has been seen, in which business has been done this week up to about 70s. 9d. per cwt., while the best bid forthcoming for July-December was 60s. 6d. As compared with April 3, spot delivery thus appreciated by 7s. 6d., whereas only 1s. 6d. per cwt. more was obtainable for the forward position. A substantial adjustment between spot and near delivery should shortly ensue, although a good premium may yet awhile be obtainable, seeing that the crop movement in the United States was belated on account of adverse weather conditions in the spring. However, shipments from the other side have already been made on a fairly large scale within the past fortnight. The London visible supply on June 5 fell to the comparatively low record of 16,648 barrels, but the fact deserves notice that a week later it was increased to 18,411 barrels, while it is expected that in the near future the stocks will appreciably increase, and thus lead to easier conditions for spot delivery. Savannah, however, at the close of last week, reported firmer markets, with buyers bidding up to 82 cents. This figure, however, is a long way below that current at this time last year, when the market stood at well over 90 cents. The outlook is certainly obscure, and there is not much confidence in the stability of the market as indicated by the limited support accorded to forward positions, but developments at this end are of course largely subject to the manipulative forces at work at the leading American centre. The current receipts there have been absorbed on a large scale lately,

owing to more active demand from dealers. Our total imports for the first five months of this year amounted to only 1,904 tons, compared with 4,920 tons for the same period last year, this being due to the fact that until the new crop movement got under way the surplus stocks at American distributing centres, which totalled 31,373 tons at the end of March last, fell to rather low figures. It may seem curious that this had no very important bearing on the southern markets within the last month or two, although recent reports have proved of a more bullish character. According to the official returns recently issued by the U.S. Turpentine and Rosin Producers' Association, which has been in existence for over four years, the total American production of turpentine oil for the season 1925-26 amounted to 478,445 barrels, or a decrease of over 50,000 barrels compared with the previous season. The annual report, however, stated that this decrease, representing 9.58 per cent., was rather wide of their early forecast, which pointed to a decrease of over 14 per cent. The wide discrepancy between the official estimate and the actual production was attributed to the fact that better prices induced producers to work the timber more closely, while the weather was exceptionally favourable for the development of operations, and, moreover, there were 200 more crops worked than indicated by the returns supplied by the producers. There is no doubt that the higher range of prices secured in the past season was responsible for the production turning out larger than had been anticipated. As emphasised by the official survey referred to, the actual production of turpentine hinges not only on the number of crops in operation, but also on conditions of weather and labour, and the opinion has been expressed that favourable or unfavourable weather can easily affect the yield to the extent of roughly 25,000 to 40,000 barrels. While the American Producers' Association have refrained from making an estimate of the new season's prospective production, their view is that the crop will not be larger than for last season, partly because of the late spring and the stringent labour conditions, although the number of the crops being worked this season was considerably over those of the previous campaign. Apparently production and consumption during last season for the whole world was fairly well balanced, and the surplus stocks closely approximated those which existed at the end of the preceding season. While market developments for the time being are still uncertain, there is little doubt that the shortage in our imports so far this year will be made up at least to a large extent later; and it can only be assumed that the inflated value ruling here for spot and near delivery must tend to exert a subduing effect on the progress of deliveries when stocks become more normal. The large excess of the London deliveries this year to date, compared with some of the previous years, is clearly due to abnormal circumstances or the filling of outside requirements chiefly on Continental account, which were effected through London far more cheaply than otherwise, because of the very heavy stocks carried forward from the close of last year. These stocks were certainly reduced more quickly than had been generally anticipated. The total deliveries in London from January 1 to June 12 amounted to 54,407 barrels, which recalls what happened in 1924, for which year the deliveries totalled as much as 102,694 barrels, owing to the heavy quantities diverted to Hamburg. In the American Association's report alluded to it was stated that "it is comparatively easy to obtain with accuracy the number of crops actually being operated, and we feel, with the experience we have gained, approximate accuracy in our survey of the crops to be operated in 1926." It is peculiar, however, that an official forecast has been withheld this year.

Sheep Dipping Orders

We published in the *C. & D.*, June 12, p. 783, the Sheep Dips (Regulation) Order, 1926 (*S.R. & O.*, No. 513). Since then two orders have been issued by the Ministry of Agriculture and Fisheries, the following being the principal provisions:—

DISEASES OF ANIMALS (DISINFECTION) ORDER, 1926

S. R. & O., No. 545

In Force from July 1

Use of a Prescribed Disinfectant

2.—(1) The provisions referred to in the Schedule hereto which relate to the use for disinfection of limewash or of a particular disinfectant, or of one of several disinfectants, shall, after the commencement of this Order, have effect as if, for the requirement of the use of limewash or disinfectant or disinfectants specified or described in such provisions, there were substituted a requirement of the use of one of the following disinfectants, hereinafter referred to as "an approved disinfectant" namely:—

(a) a five per cent. solution of standard phenol: or

(b) a disinfectant approved by the Minister for the purposes of this Order, if used at the dilution at which such disinfectant is approved.

(2) Where under any Order mentioned in the Schedule hereto the disinfection is carried out by the use of an approved disinfectant, it shall not be necessary, notwithstanding any provision in the Order, to apply limewash to the place or thing disinfected.

Labels to be Affixed to Approved Disinfectant

3.—(1) Every receptacle containing an approved disinfectant shall before being placed on sale or delivered to a purchaser be clearly and distinctly labelled by the manufacturer or vendor thereof in a form approved by the Minister stating the dilution at which the disinfectant is approved by the Minister, and certifying either that the disinfectant consists of standard phenol or that the contents of the receptacle are of the same quality and composition as the sample submitted to the Government Chemist for examination and upon which the Minister's approval is based.

(2) A disinfectant contained in a receptacle marked with a label in the form required by this Article shall be deemed to be an approved disinfectant.

Provision for Sampling of Disinfectants

4. Where under any Order of the Minister the use of an approved disinfectant is required, the person using the disinfectant shall, if so required by an Inspector of the Ministry or of a Local Authority furnish him with a sample of the disinfectant used, or permit him to take such sample, and shall furnish the Inspector with all such particulars as may be reasonably required as to the name or the composition of the disinfectant used.

Offences

5. If any disinfectant which is not approved by the Minister is falsely marked with a statement or indication that it has been so approved, or if any disinfectant purporting to be an approved disinfectant is not marked with a label as required by this Order, the manufacturer and the retailer or other person selling the disinfectant, and the person who shall have so marked the disinfectant or caused the same to be so marked, or who shall use the disinfectant knowing the same to have been falsely marked, or omitting so to mark the disinfectant, as the case may be, shall be deemed guilty of an offence against the Act of 1894.

SHEEP DIPPING (REGULATION) ORDER, 1926

S. R. & O., No. 572

Prescribed Period of Immersion of Sheep in an Approved Sheep Dip

1.—(1) Where by any Order of the Minister or by any regulation of a Local Authority made thereunder the dipping of sheep is required, the sheep shall be dipped by a thorough immersion of the whole body, including the head and ears, in a sheep dip approved by the Minister for sheep scab or purporting to be so approved. The sheep shall remain in the bath for not less than one minute.

(2) In the Note at the foot of the Second Schedule to the Sheep Scab Order of 1920, relating to the required period of immersion in certain sheep dips approved by the Minister for sheep scab, the words "one minute" shall be substituted for the words "half-a-minute," and the said Order shall be read and have effect accordingly.

Stratford-on-Avon

By R. CECIL OWEN, B.Sc.

Thursday, August 5, is the date fixed for the Conference excursion to Stratford-on-Avon, when a special train will be run from Leicester. Luncheon will be served in the train. On arrival the party will be subdivided in accordance with the pre-arranged scheme, and each subdivision will be conducted to the various places of interest in turn. Visitors will then be free to do as they please till the time of the departure of the arranged trains. They will make their own arrangements for tea. On the return journey dinner will be served in the train.

APART from the Shakespearian romance with which the town is so heavily charged, Stratford-on-Avon has attractions which would always invest it with fame. It has a setting, in a quiet countryside, of singular beauty. Its physical atmosphere, for a place which is neither elevated nor near the sea-coast, is surprisingly bracing. And the town itself is as quaint, as full of picturesque corners and humble relics of centuries long gone by, as any spot in England. It is worth noticing that all these features are causally connected. He who wrote:

"I know a bank whercon the wild thyme blows,
Where ox-lips and the nodding violet grows,"

had been moved to deep emotion as he took his walks through the fields, or sat in meditation on the river brink, round about his native town. Again, it is owing



ON THE AVON, STRATFORD

largely, if not entirely, to the Shakespeare tradition that so much care is expended in the preservation of even the least pretentious examples of Tudor architecture. The smallest half-timber cottage, if it is of respectable age, is regarded as a prize to be cherished. If necessary, it undergoes restoration; and in the process it is sometimes possible to see its decaying timbers reinforced with steel girders which are presently to be hidden away from the too critical observer! The town, full of restorations and preservations, imparts, in every street, a strong suggestion of an age that is remote from this that we know.

Here, as elsewhere, the river is the making of the scenery. The keynote of the landscape is gentleness, and this gentlest of rivers reinforces the note. The flow of its waters is so tranquil as to be almost imperceptible. The meadows that border it are wide and perfectly flat till they merge into the lowest of gently sloping hillocks. The Avon twists and turns so often as to make a boating excursion along its surface a thing of constant surprises. It is a shallow river, and there are few spots in it near to Stratford that are deep enough to drown a man. Rowing is difficult, not only on account of this shallowness, but owing to the short distance between the banks. True, it widens considerably at Clopton Bridge and maintains a respectable breadth as far as the church. But it is in the opposite direction—towards Warwick—that boating parties (mostly "couples") go, for in this direction is to be found a generous display of overhanging foliage! The most remarkable feature of all is the plenitude of pollard willows that mark the river's course. Looking across the wide expanses of flat meadow land that surround the Avon, it is often impossible to see the

river in the absence of elevated ground from which to view it. But note the winding lines of willows, and there you will find the banks of the stream.

Wealthy families have for many centuries chosen this neighbourhood for their home. One large country house, the grounds of which run down to the Avon, is of particular interest. Charlecote, the home of the Lucys, is four miles out of Stratford, and it was in the park, according to a fairly well-authenticated story, that Shakespeare, along with some high-spirited cronies, played the part of poacher and carried off some of Sir Thomas Lucy's deer. Caught red-handed, he was locked up for the night in the porter's lodge, and brought before Sir Thomas on the following morning. What Lucy said we do not know, but Shakespeare took an enduring revenge. He fixed to the park gates a copy of some satirical verses, the only surviving lines of which are these:—

"A Parliament member, a justice of peace,
At home a poor scarecrow, at London an ass;
If lowsie is Lucy, as some volke miscalle it,
Then Lucy is lowsie whatever befall it;
He thinks himself great
Yet an ass in his state
We allow by his ears but with asses to mate.
If Lucy is lowsie, as some volke miscalle it,
Then sing lowsie Lucy whatever befall it."

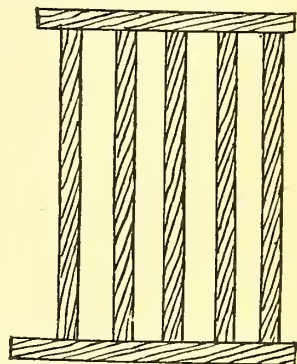
The authority for these verses is an old man who lived at Stratford and died in 1703. Sir Sidney Lee, however, denies their authenticity. Shakespeare, it is believed, caricatured Lucy as Justice Shallow in "The Merry Wives of Windsor" and in "King Henry IV" (Part I). Shallow and Lucy are held to be one, because Shallow's coat-of-arms is that of the Lucys, namely, "three luses [pikes or jacks] haurient argent." Washington Irving has left an amusing account (in the "Sketch Book") of his visit to Charlecote, and he remarks upon the irony of the immortality of Sir Thomas Lucy, based as it is upon the satires of an apparently contemptible poacher.

THE TOWN

As I have hinted, the interest of the town is far from being confined to the half-dozen buildings that are

specifically associated with the memory of William Shakespeare. Before exploring these places of supreme interest let us inspect the rest of the town. Many worse ways of killing time could be devised than by strolling round the streets, probing into odd corners and imbibing the characteristic atmosphere. Study first the half-timber buildings, of which there are so many examples. They belong mainly to the fifteenth, sixteenth and seventeenth centuries—when they do not originate in the nineteenth or twentieth. Fortunately, even the tiro will have no difficulty in distinguishing between the old and the new. To refer a half-timber building to its century is no difficult matter. The fifteenth-century houses have the upright timbers close together; they are six or eight feet long and are not intersected by timbers placed at right angles. The sixteenth-century specimens are similar but for having horizontal beams, or transoms, as they are called. The seventeenth-century buildings, again, have transoms and upright posts placed much further apart, so that the façade appears to be built upon a series of square frames.*

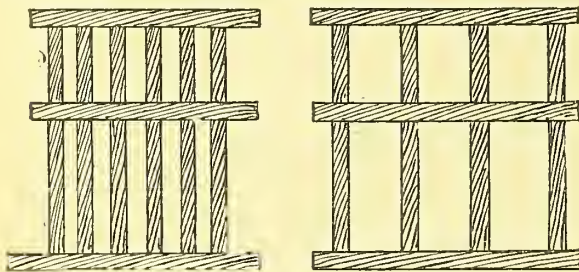
The best example of the first is perhaps to be seen in the Grammar School and Almshouses, which are purely fifteenth-century work, well preserved. The birthplace shows fifteenth-century work below and seventeenth-century (i.e., after restoration) above. Harvard House has sixteenth-century work. But examples need not be multiplied, for the reader will find it fascinating to seek



15TH CENTURY CLOSE POST FRAME

* Cf. C. E. Forrest's "Old Houses of Stratford-on-Avon."

them cut on his own account. High Street has some notable timber buildings. The Garrick Inn is a choice specimen. It is much older than its name, which is derived from a belief that Garrick was a moderately good customer when he visited the town to organise the Shake-



16TH CENTURY CLOSE POST AND TRANSOME FRAME

17TH CENTURY SQUARE PANEL FRAME

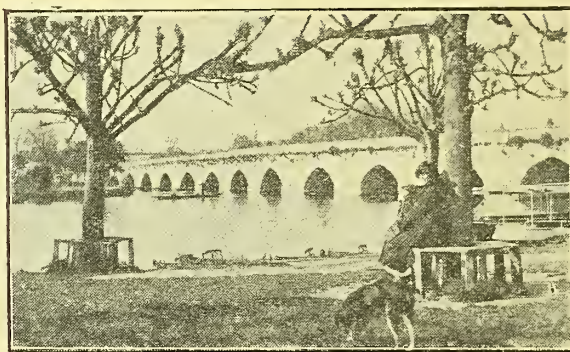
speare Festival of 1769, which lasted from September 6 to September 9. This Festival was not merely the series of dramatic performances which it is to-day. Dr. Arne conducted his oratorio, "Judith," in the parish church, when the accompaniment was rendered by the Drury Lane orchestra. The firing of cannon, a masquerade of Shakespearian characters, a sumptuous breakfast partaken of by the corporation, concerts and horse races formed part of the programme. A "Dedication Ode" was written by Garrick, music was composed for it by Arne, and the work was performed in a specially erected pavilion. As Sir Sidney Lee drily observes, "The irrelevance of most of the ceremonials excited ridicule." Earlier in the year, however, the new town hall (an uninspiring building) had been opened, and two such great events were deemed to excuse much merry-making. Garrick was made first honorary freeman of the borough, and he returned the compliment by presenting a statue of Shakespeare to embellish the building's exterior, and his portrait by Gainsborough to hang inside. Both Johnson and Boswell assisted at these commemorative ceremonies. The fine old coaching inn, The Red Horse, in Bridge Street, was made famous later by Washington Irving, who said:

"Shall I not take my ease in mine inn?" thought I, as I gave the fire a stir, lolled back in my elbow chair, and cast a complacent look about the little parlour at the Red Horse at Stratford-on-Avon. . . . Then I went to bed and dreamt all night of Shakespeare, the Jubilee, and David Garrick."

The Washington Irving room, round whose walls are portraits of Irving and of other famous people who have stayed here, is carefully preserved, as is the chair in which Irving sat, and the identical poker with which he stirred the fire. Then there is the Falcon, in High Street, right opposite New Place: a modernised inn, but a place to be carefully surveyed because of its associations with the Bard. Finally, there is the Shakespeare Hotel, which has been created out of some extremely fine Elizabethan houses—fifteenth-century work—whose façades have been preserved apparently intact. The interior is full of the illusions of the same century—oak beams, ingle nooks, odd corners, steps up and down, old staircases and balustrades, low ceilings—all are there to charm the romantically minded.

Harvard House has already been referred to. It was built in 1596 by Thomas Rogers, whose daughter was the mother of John Harvard, the founder of the American college and university to which he gave his name. Next door but one is Tudor House, another fine half-timber structure with some strange carving on the front of it. Nearly opposite is an old house where used to dwell Julius Shaw, one of Shakespeare's friends and the first witness of his will. To-day the house is the headquarters of the Shakespeare Head Press, where many beautiful books are made, the work being done mostly by hand. Visitors are invited to view the place and may witness the creation of famous books in attractive editions, including the "Players' Shakespeare." One other structure of great interest must be referred to—the Clopton Bridge, of fourteen stone arches, which spans the Avon at the very place where it momentarily broadens to double its average width. This position is inevitable because here,

from time immemorial, has been a ford—that which gives its name to the town, for Stratford—or Stretforde—means the street leading to the ford. It is named after Sir Hugh Clopton, who was public-spirited enough to pay for its erection in place of an inefficient wooden bridge, which was, moreover, unapproachable when the river—as it frequently did—overflowed its banks. It was Sir Hugh, by the way, who built New Place in 1483—a house made famous for ever owing to its purchase, more than a century later, by Shakespeare. When we come to the Parish Church we shall see the Clopton Chapel, where lie some of Sir Hugh's ancestors, who are commemorated by a pair of recumbent statues. The second bridge over the Avon, lying close to the Clopton Bridge, was built to carry a horse tramway from Stratford to Moreton-in-the-Marsh nearly a century ago. The rails were taken up during the European war, and it is now a footbridge affording a short cut to the meadows which lie opposite the Memorial Theatre. In leaving the town let us glance at Rother Street and Rother Market, where cattle were offered for sale. "Rother" is an Anglo-Saxon word meaning horned cattle. Shakespeare, in "Timon of Athens," says that the "pasture lards the rother's sides." Some commentators, by the way, changed "rother's" to "brother's"!



CLOPTON BRIDGE

Shakespeare is very much a prophet in his own town. A story is told of an American visitor who approached a yokel in the streets of Stratford with, "Can you direct me to Shakespeare's birthplace?" "Noa," was the reply. "Come, my man," said the tourist, "you've surely heard of Shakespeare?" "Oo, ay," answered the man, "he writ the Bible, didn't he?" Let us make our way to the Birthplace in Henley Street. To-day it is the property of the Shakespeare Trust, and it houses a museum of precious relics and exhibits. John Shakespeare married Mary Arden in 1557, having already purchased the two houses, which together are now known as the Birthplace. They served as residence and place of business, for John was very like the modern chemist in this—he combined many vocations in his own person. He was a dealer in leather, meat, wool, corn, malt, and skins, and he has been described as a butcher and as a glover. He held, also, many municipal offices—he was ale-taster, Burgess (or town-councillor), petty constable, affeeror (or fine-determiner), and chamberlain—i.e., auditor of the town's accounts.† He was a merry fellow "who dared crack a jest at any time." His third child and first son was born in April 1564, probably on April 22 or 23—we cannot be quite sure. What is certain, however, is that he was baptised on April 26 at the Parish Church, the record, which anyone may inspect and which is here reproduced, reading: "April 26th—Gulielmus, filius Johannes Shakespeare." Conference visitors will be shown the room in which, it is alleged, the poet was born;‡ but it must be frankly admitted that there is some doubt as to which room was the actual birthplace.

† It is amusing to note, however, that his first municipal appearance related to a fine inflicted upon him (ninepence was the amount) for permitting a refuse-heap to accumulate in front of his Henley Street house.

‡ Its walls are scribbled over with signatures, including those of such famous people as Thackeray, Dickens, Carlyle and Tennyson.

We need not recount the controversy here; the curious reader will find it in Sidney Lee's "Life." Externally the house is to-day in much the same condition in which Shakespeare knew it. The gables which project from the roof are, however, a restoration, made in 1847, when the premises were bought by public subscription and converted into a museum. A picture made in 1788 shows the



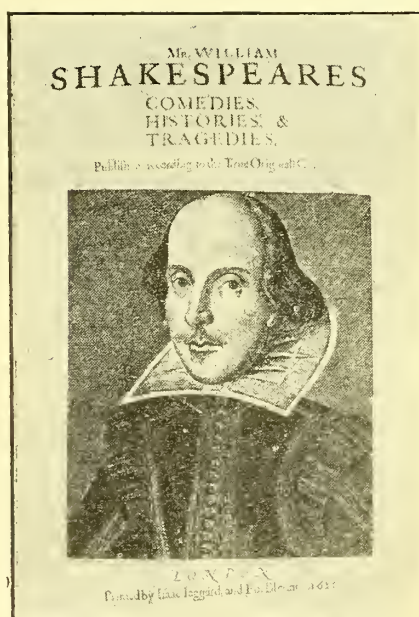
SHAKESPEARE'S BIRTHPLACE

gables still in existence; in another, made in 1806, the gables have disappeared. To-day, the Birthplace is detached (or, as a twin edifice, semi-detached), but for centuries it stood as a unit in a row of houses. The property on either side was demolished at the time of the restoration, whereby the appearance gained considerably. Shakespeare inherited the property on the death of his father in 1601, but he never afterwards occupied it. His sister, Mrs. Joan Hart, lived here, however, and she re-established the division into two houses. The portion on the right she let to a tenant, who made an inn of it—the "Maidenhead," known later as the "Swan and Maidenhead." An inn it remained, under the second name, till 1846. Till 1806 the family of Hart maintained the ownership, and then it was sold for £230 to Thomas Court, the landlord of the "Swan and Maidenhead," who promptly turned the non-licensed portion into a butcher's shop.

THE PORTRAITS OF SHAKESPEARE

The collection which has been brought together inside the Birthplace is probably the most precious of its kind in the world. Certainly nothing in Stratford or in the British Museum exceeds it in the variety or rarity of its Shakespearian exhibits. No adequate accounts of the contents can be given here—the catalogue occupies 176 pages of closely printed matter. But, in order to whet the reader's appetite, one or two items will be chosen at random for remark. "Quot homines, tot sententiae," and each visitor will single out his own favourite centre of interest. Of overwhelming attraction are the portraits of Shakespeare, of which there are two originals and a number of facsimiles. Now, strictly speaking, there is no authentic portrait of Shakespeare in existence. That is to say, no portrait was published or exhibited, or, apparently, executed, during his lifetime. What is generally regarded as the best portrait is the bust in the Parish Church. The earliest portrait in two dimensions is the engraving—a copy of which is here reproduced—which forms the title-page of the First Folio published in 1623, seven years after the author's death. This is known as the Droeshout print, from the name of the artist, Martin Droeshout, who was only fifteen years old when Shakespeare died and twenty-two when he made the engraving. Yet the lines of Ben Jonson—who was a "bosom pal" of the poet's—printed on the page opposite the portrait acclaim the excellence of the portrait. "Well," says Jonson, "he hath hit his face"—a great compliment in view of the wooden expression of this amateurish performance. The bust in the church was executed some time prior to 1623 by the brothers Nicholas and Garret Johnson, Southwark tombmakers. Sir Sidney Lee expresses the general view when he says that "the Stratford bust is a clumsy piece of work." The Johnsons may or may not have seen and known Shakespeare, though they appear to have relied upon the memory of friends. And

this bust, be it noted, is generally regarded as the most reliable of all the portraits. Next in interest comes the "Droeshout original" or the "Flower" portrait, so called from having been in the possession of Mr. Edgar Flower, of Stratford, a relative of whom presented it to the Memorial Gallery. The mystery which surrounds it gives it an attraction for the literary detective. It may be described as a version, in oils, of the Droeshout print, and the question arises—which came first, print or painting? If, as Poynter, Colvin and Cust held, the painting was the parent of the print, the "Droeshout original" is of the greatest importance. But, alas! it seems clear enough that the painting is the child and not the parent of the Droeshout engraving, and its value is thereby much depreciated. The reader may pursue the subject for himself in the pages of Sir Sidney Lee and in the latest edition of the "Encyclopædia Britannica." The Ely Palace portrait is so called from its having been purchased by Thomas Turton, Bishop of Ely, in 1845; he found it in the shop of an obscure broker. To-day it hangs in the Birthplace. Extravagant claims have been made as to its authenticity—it also has been credited with being the original of the Droeshout print! The best-known portrait is the "Chandos" (the Duke of Buckingham and Chandos used to own it). The original hangs in the National Gallery, and an excellent reproduction is on view in the Birthplace. It is, perhaps, as little reliable as any of the portraits. If it indeed is a portrait of Shakespeare, it shows him rather like an Italian; the complexion is swarthy and the sitter is wearing earrings; the hair flows long over the collar. Although there is a touch of melodrama in the painting, it is a work of considerable artistic merit. Who the artist is we do not know, though it was at one time suggested that it was none other than Burbage, the friend and fellow-actor of Shakespeare—a supposition which, says Sir Sidney Lee, is not corroborated; and he adds that "it was painted from fanciful descriptions of him some years after his death." It was certainly in the possession, at one time, of Sir William D'Avenant, reputed



TITLE-PAGE OF THE FIRST FOLIO
(From a copy in the British Museum)

to be Shakespeare's godson. In 1783 Ozias Humphrey made a crayon copy of the "Chandos," and this, which has an interest of its own, is to be seen in the Birthplace. Within the present narrow limits one cannot enumerate all the portraits—the Felton, the Janssen, the Soest, the Stratford, the miniatures, and the rest. Either as originals or as replicas, all may be seen, here or there, at Stratford. A word about the so-called

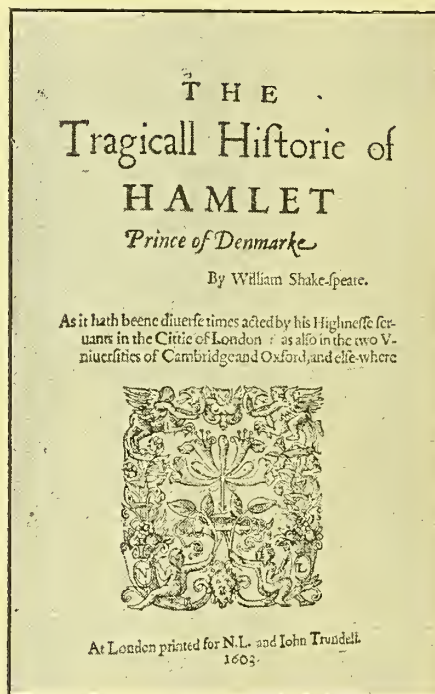
Darmstadt Death Mask. In 1849 Dr. Ludwig Becker picked up a death-mask in a ragshop at Mainz and "discovered" that it was Shakespeare's. He lost no time in spreading the news of so surpassingly interesting a disclosure. The features certainly resemble Shakespeare's, and on the back of the bust is the alluring inscription, "A° Dni 1616": The general conclusions are summed up in the Birthplace catalogue thus: "The chain of evidence which would identify the mask with Shakespeare's features is incomplete, and *the mask is probably a forgery by Becker.*" Again, the Garrick Club bust§ was discovered in 1848, bricked up in a wall of a certain china warehouse in Lincoln's Inn Fields, London. Upon the site of the discovery once stood Sir William D'Avenant's "Duke's Theatre," and from this fact has proceeded a long chain of logic which seeks to prove that the bust was intended to represent Shakespeare and was executed soon after his death. A high authority attributes it to Louis François Roubiliac, who came to London in 1730, and declares that its workmanship makes the date of its production the eighteenth century at the earliest—an opinion now all but universally accepted. It is beautifully wrought in terra-cotta and painted black. It is evidently a three-dimension rendering of the "Chandos" portrait. The present owners are the Garrick Club, to whom it was presented by the seventh Duke of Devonshire in 1855. It is worth noting in this connection that in 1758 Garrick commissioned Roubiliac to execute a full-length statue of Shakespeare. It stands in the British Museum, and the resemblance between the face of it and of the D'Avenant or Garrick Club bust is striking.

THE QUARTOS AND FOLIOS

Everyone will desire to see the actual volumes in which the plays of Shakespeare were first given to the world. Some specimens are on view in the Birthplace. The only plays to be printed during the lifetime of the author, sixteen in number—eighteen, if we include "Contention" and "The True Tragedy" (first drafts of the second and third parts of "King Henry VI")—appeared each in a separate volume measuring 7 inches by 5 inches (some slightly larger, some smaller). These are known as the quartos, and were published between 1594 and 1613. Some of them went into five editions in this period—for example, "King Richard III"—and some reached only one edition—as "The Merchant of Venice." The price was fivepence or sixpence. (In March 1926 a quarto fetched £3,900!) Shakespeare's day knew nothing of the modern practice of publishing and producing a play simultaneously. The printing of a play was discouraged, by producers and even by playwrights themselves, as being inimical to theatre-going. Therefore, when a publisher, piratical or otherwise, desired to print a play, he did one of two things: either he bribed an actor to give him a written copy, or else he sent a representative to take down the parts, in the defective shorthand of the time, as they were spoken by the actors in the theatre. Add to these things the blue-pencilling activities of managers, who deleted and "improved" according to their own sweet will, and it is at once evident why the quartos represent Shakespeare only partially. Quarto editions of certain others of Shakespeare's plays were published in 1619—three years after his death—along with a piece called "Sir John Oldcastle," fraudulently attributed to Shakespeare.

The first attempt to give to the world the whole of Shakespeare's dramatic work was made in 1623 (seven years after his death) by a syndicate of five persons. The outcome was the First Folio, a volume measuring 12½ inches by 8½ inches, and containing nearly a thousand double-column pages. The title-page, showing Droeshout's engraving, reads: "Mr. William / Shakespeares / Comedies / Histories & / Tragedies. / Published according to the True Originall Copies." Then under portrait: "London / Printed by Isaac Iaggard and Ed. Blount, 1623." Five hundred copies were printed and sold at a pound each. (The price of a sound copy of the First Folio reached £13,500 in 1922.) Thirty-six plays were thus brought together for the first

time in one volume. Twenty of them—nine comedies, five histories, and six tragedies—were published for the first time. (The rest had already saluted the public in the guise of quartos.) The "second impression"—or the Second Folio—was published in 1632, the Third Folio in 1664, and the Fourth in 1685. The reader has already grasped the difficulties that beset the path of Shakespeare's editors, but undoubtedly they made honest and energetic endeavours to present the plays as nearly as possible as they came from the pen of the author. A note for the curious: The closest correspondence to the originals is found in "The Tempest," "The Two Gentlemen of Verona," "Twelfth-Night," "Julius Cæsar," "A Winter's Tale," and "Antony and Cleopatra." The most corrupt plays are: "All's Well that Ends Well," "Measure for Measure," "Macbeth," "Coriolanus," "Cymbeline," and "Timon of Athens." The names of the five who jointly organised the publication of the First Folio deserve immortalising. We can at least mention them: William Jaggard and Isaac



TITLE-PAGE OF THE FIRST QUARTO OF "HAMLET"
(From the unique copy in the Duke of Devonshire's Library)

his son (printers), Edward Blount (publisher and lover of letters), William Apsley and John Smethwick (booksellers). Of the remainder of the four hundred odd exhibits at the Birthplace no adequate account can be given here. John Shakespeare, for all his shrewdness and worldly means, could not write—and in the Birthplace is to be found his mark, as also his wife Mary's. Legal documents are here, one conveying (as we now say) the very house we are in to John Shakespeare, and another, New Place, to "Will." The only known letter in existence written to Shakespeare is here—it is from one Richard Quynne, begging the loan of £30, and is dated October 25, 1593. Here, too, are interesting signatures—those of Shakespeare's daughters, of the amusing Sir Thomas Lucy and of Ben Jonson (on the title-page of a book). Visitors see what is believed to be a ring of Shakespeare's and the desk he used at the Stratford Grammar School, a facsimile of his will and a fine collection of Elizabethan coins. A number of books, actually used by Shakespeare, who was indebted to them for matter and ideas, are shown—a copy of Montaigne dated 1603, T. Wilson's "Arte of Rhetorique" (1567), Golding's "Ovid" (1567), John

§ Copy in Memorial Museum, Stratford.

Lyly's "Euphues" (1587), Roger Ascham's "Schoolmaster" (1571), Holinshed's "Chronicles" (1587), North's "Plutarch" (1603), and many more. The botany of the times can be studied from the Great Herbal (1526), Turner's Herbal (1551), and Gerard's Herbal (1597). Very interesting, too, is a book by Dr. John Hall, who married Shakespeare's eldest daughter, Susanna; it is called "Select Observations on English Bodies: or Cures both Empericall and Historicall performed upon very eminent Persons in desperate Diseases"—a duodecimo volume bearing the date 1657. The picture of the Globe Theatre, though an imaginary reconstruction, shows the building that Shakespeare knew. There is plenty of old furniture, from "leather bottels" and mouse-traps to linen chests and cooking pots. Three minutes' walk takes us to the spot where Shakespeare died.

NEW PLACE,

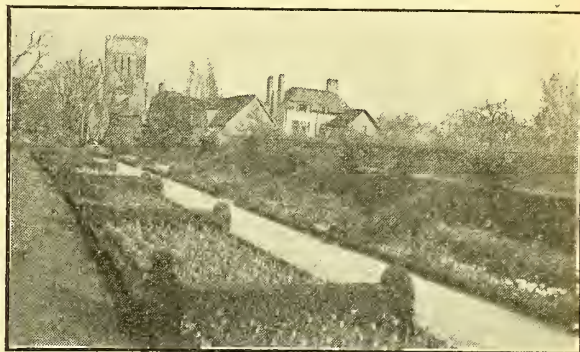
as I have explained, was built by Sir Hugh Clopton in 1483, and purchased by Shakespeare as a residence in 1597. Here he died on April 23, 1616. It stood at the corner of Chapel Street and Chapel Lane, but was pulled down in 1759; and to-day only the foundations, which are carefully preserved, are to be seen. They stand in the grounds of an interesting house, which used to be next door to New Place—Nash's House, as it is called, since it was once occupied by Thomas Nash, who married Shakespeare's grand-daughter, Elizabeth Hall. Nash's House is to-day a museum full of



HIGH STREET, STRATFORD—"NEW PLACE" IN THE FOREGROUND

exhibits of interest to all students of Shakespeare. We will enter it in a moment and look round. Before doing so let us look at the mulberry tree that is growing just behind the foundations of New Place. It will be seen that the tree is old and infirm, but that its sagging branches have been propped up with loving solicitation. It is grown from a cutting taken from a mulberry tree planted by Shakespeare. The curious reader naturally wants to know what became of the original mulberry tree and (a more important question) why New Place was ever pulled down, especially seeing what lavish care has been expended in the preservation of other places associated with the life of the poet? The answer is that a certain Rev. Francis Gastrell, who ought to have known better, pulled down New Place and destroyed the mulberry tree in 1756. This "unjust steward" was the owner of the property, and grew peppery at receiving—as well he might—so many applications to view the house in which Shakespeare died and the tree he planted. When we go into Nash's House we shall see a table that is veneered with the wood of Shakespeare's mulberry tree. Many chunks of the tree were sold as relics—and like pieces of the true Cross they have multiplied themselves exceedingly. At one time there were as many blocks in existence as would have made half a dozen trees. Behind Nash's House is a beautiful sunk garden—and when the writer last saw it, it was ablaze with tulips of every colour. Further behind are pleasure grounds carefully tended, with paths to stroll along, seats placed under shady trees for the meditatively inclined, a wealth of glorious blossoms here, there and everywhere, and extensive lawns well

trimmed. Let us enter Nash's House. Few truly Shakespearian relics are here, it is true, but there is much that illustrates the days of Elizabeth. There is, for example, a fine collection of portraits—some originals, some replicas. You will find here Sir Hugh

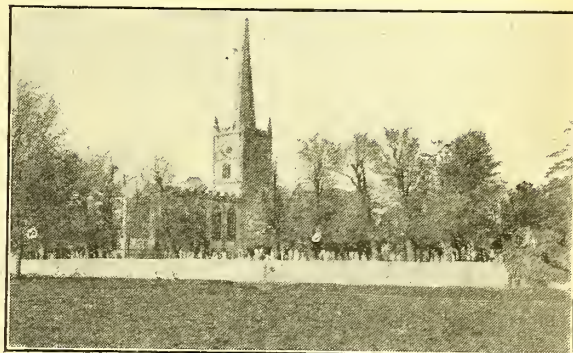


"NEW PLACE" GARDENS—MEMORIAL THEATRE IN THE BACKGROUND

Clopton and Charlotte, his wife; Ben Jonson and Francis Beaumont and John Fletcher; Henry Wriothesley, third Earl of Southampton, Shakespeare's famous patron. Over there is a group of portraits which visitors will want to study carefully—they represent actors who were the friends of the dramatist—Nathan Field, William Sly, Michael Drayton, and Richard Burbage. On the adjacent wall is John Evelyn, the diarist. In the same room is an ancient shovel-board—looking very like a refectory table. It was brought here from the Falcon Inn, on the opposite side of the street, and it is supposed that Shakespeare played many a game upon it. Lying about is much old furniture, similar to what Shakespeare knew and used. The roasting-spit, standing near the wide Elizabethan fireplace, is now a curiosity; its simple mechanism causes it to rotate horizontally and it is large enough to accommodate a whole sheep. Such things as stocks and man-traps, dating back to the sixteenth century, are on view. There is a section, too, of exhibits that are more remote from Shakespeare's day than his from ours: Roman and Anglo-Saxon remains—coins, pottery, and human remains, all found near their present lodgment. Upstairs is the table with the mulberry-wood top, already mentioned; and relics of Garrick and of the Shakespeare Festival, which he did so much to promote.

THE PARISH CHURCH

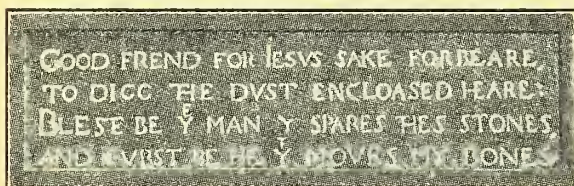
of Holy Trinity, though chiefly of interest on account of its connection with Shakespeare and his relatives, is a noble and spacious structure occupying a beautiful situation on the right bank of the Avon. It is cruci-



HOLY TRINITY CHURCH, STRATFORD-ON-AVON

form with a central tower and spire, a long chancel, transepts (used as chapels), two other chapels on either side of the nave at the east end, and many stained glass windows of considerable interest and merit. Several styles are to be seen here—the central tower

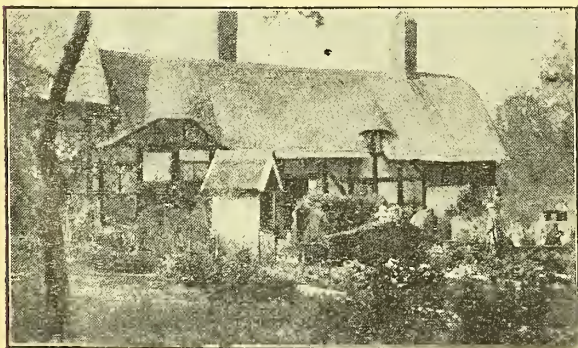
is Early English; the aisles and columns of nave, Decorated; clerestory, porch and chancel, Perpendicular. The font—badly knocked about—in which Shakespeare was baptised, is on view, as also is the register showing the entry of his baptism (April 26, 1564) and of his death (April 23, 1616). Note also the chained Bible, dated 1611, and the knocker, on the door of the porch, which is an old sanctuary ring which afforded thirty-seven days' protection (or sanctuary) to any criminal who could reach it before being overtaken by the officers of the law. Mention has already been made of the most interesting thing (but one) in the church, Shakespeare's bust. In 1793 Edmund Malone, the critic, persuaded the vicar to have the bust whitewashed. The whitewash was removed in 1861, when some evidence of the original colouring was found beneath; Simon Collins then repainted the bust in what were believed to be the colours of the designer. Just below the bust, in front of the altar, is the grave of William Shakespeare, flanked by those of his wife; of Thomas Nash, the husband of Shakespeare's granddaughter; Dr. Hall, the husband of Shakespeare's elder daughter; and Susannah Hall, the wife of Dr. Hall. Shakespeare's tombstone bears no name, but only the following well-known lines, which we reproduce in facsimile:—



The north transept, now used as a vestry, is the chapel of St. Andrew; the south transept is the chapel of St. Peter. The chapel at the north-east end of the nave contains some fine recumbent effigies to the memory of Sir Hugh Clopton's ancestors, while that at the south-east end is a chantry to commemorate St. Thomas of Canterbury.

ANN HATHAWAY'S COTTAGE

is at Shottery, a hamlet about a mile out of Stratford, reached by a field-path. It is a typical thatched, half-timber cottage of the Tudor period; or, rather, it was originally a pair of cottages, but they have long been united. In September 1581 Richard Hathaway, the owner of this property, died here. He was a small, though prosperous, farmer, and owned the house and two and a half "virgates" of land, a virgate being only a quarter of an acre. His will is the source of our knowledge of his family. He had four sons and three daughters. The eldest daughter, named Agnes, is the one Shakespeare appears to have married, for Agnes and Ann

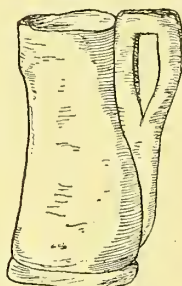


ANN HATHAWAY'S COTTAGE

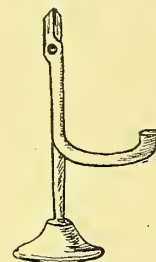
were, in the sixteenth century and even later, interchangeable terms. The marriage registry of William and Ann has never been traced. We do not know where or when he was married. All we know is that two "husbandmen of Stratford," to wit, Fulk Sandells and

John Richardson, were parties to a bond guaranteeing the matrimonial eligibility of the couple—a frequent preliminary to marriage; and it is presumed that married they were. Ann, by the way, was William's senior by eight years; the poet was only eighteen years old

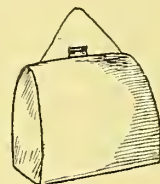
OBJECTS IN ANN HATHAWAY'S HOUSE (ALL ELIZABETHAN)



1. LEATHER JUG,
KNOWN AS A
"BLACK JACK"



2. RUSH LIGHT
AND CANDLE HOLDER



3. LEATHER BOTTLE

at the time. They lived together—happily, it is believed—all their lives, and had three children, Susannah, Hamnet and Judith, the last two being twins. It is only natural to suppose, then, that Will came to Shottery to do his courting. Let us examine the place carefully. Before going inside, observe the delightful garden, with its well-stocked beds and its crazy pavements and general old-world air. In spite of alterations and restorations, the cottage is much to-day as it was originally. And although there are no actual Shakespearian relics on view, the furniture does illustrate Shakespeare's day, and the rooms are substantially in the state in which he knew them so well. Down-



OLD COTTAGES AT SHOTTERY

stairs have been collected furniture and domestic utensils. One may see old chairs and chests and gate-leg tables, warming pans, old brass saucepans, and the like. Look at that "leather bottle" that hangs in the kitchen; it looks rather like a large-sized lady's hand-bag in leather. It was filled with liquor and carried on a journey. Over there is a "Black Jack"—often mentioned in old English songs—a great leather jug, holding perhaps two quarts. The rush-light holder takes us back to days that were old and bad so far as illumination is concerned. A pair of upright pincers—with a side piece that projects to hold a candle that was once an ingenious novelty indeed—grips a rush-light which consisted simply of a rush soaked in any convenient fat, such as melted suet. As it burned the lighted end was drawn further from the pincers. Note, too, the large brick oven with its wooden door (a rare specimen) and the bread shovel for manipulating the loaves when undergoing the baking process. In the next room is a fine dresser holding some old pewter which collectors cast envious eyes upon—and a square wooden platter which represents an early attempt at labour saving in the home. You ate your meat on one side

Now in the registry of the Bishop of Worcester.

and your pudding from the reverse side. The Courting Settle is here—a piece of ritual furniture for courting couples. Upstairs is that very fascinating piece of furniture, Ann Hathaway's bed. The original rush mattress is still to be seen—springy and comfortable as any modern contraption—and some wonderful and beautiful bed linen, hand-embroidered in a manner passing skilful to a mere man. This property remained in the possession of the Hathaway family till 1838. The male line became extinct, however, according to Sir Sidney Lee, in 1746. In 1892 the property was taken over by the Birthplace Trustees.

THE GRAMMAR SCHOOL

is of interest for its own sake as well as from the fact of its having numbered William Shakespeare among its pupils. It occupies the first floor of a building which is as magnificent a specimen of half-timber work as any in England. Adjoining it, and continuing the architectural scheme, is a row of almshouses, the whole forming a picture surpassing anything of the kind in the country. The ground floor of the school building is the old hall of the Guild of the Holy Cross—now a cloak-room for the boys. Originally built by Robert de Stratford in 1269, it was refashioned early in the fifteenth century, and the present fabric dates back only to 1428. Adjoining it on the east is the Guild Chapel, which was also built in 1269, though it was rebuilt by Sir Hugh Clopton (whose house, it will be remembered, was a few feet away on the opposite corner of Chapel Lane). The chapel has a beautiful exterior; and its tower forms a fitting climax to a group which includes the school and the almshouses; but the interior is worse than disappointing. Once beautiful, its lines have been cut into and ruined by a gallery and by bulky pews. Shakespeare must have been familiar with the chapel, and probably (willy-nilly) attended services there. The boys of the Grammar School certainly worship (or, anyhow, put in an appearance) there at regular intervals to-day. When Shakespeare began his school career his father was in low water financially, but William and his two brothers were entitled to free education at the Grammar School. We know little or nothing of his life at school, though a brass plate, in the main schoolroom, marks (one knows not how truly) the supposed position of his desk—an object we have already seen at the Birthplace. It was an efficient school, Latin in particular being well taught. Ben Jonson's remarks, in this connection, will occur to everyone: Shakespeare knew "little Latin and less Greek"—a declaration which adds another element to the problem of Shakespeare, since we do not know what standards of comparison Jonson had in mind. James Russell Lowell argues that Shakespeare probably knew the Greek dramatists—say, in Latin translation—since there are certain rather striking parallels between the two. For example, in "Electra" the chorus says: "Remember, Electra, your father is mortal; so, too, is Orestes. Grieve then not overmuch, for the debt of suffering must be paid by all." In "Hamlet" the King says:

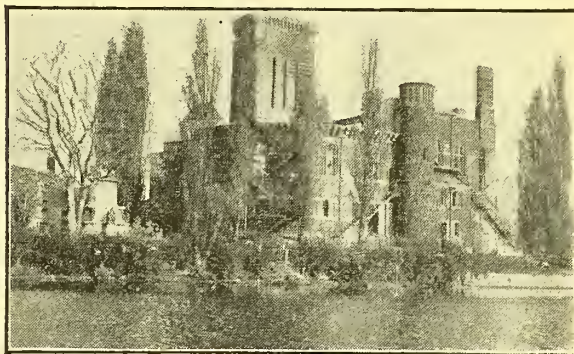
"All that live must die
But you must know, your father lost a father;
That father lost, lost his . . . But to persever
In obstinate condolement is a course
Of impious stubbornness."

Sir Sidney Lee, however, regards the parallels as mere coincidences, and as furnishing no evidence of first-hand knowledge (or otherwise) of the Greek dramatists on Shakespeare's part. The same ideas, he believes, have occurred to both sets of artists. The net result is that we are left in the dark as to what Shakespeare knew and as to the nature and extent of his education. While Shakespeare was at school he was under two headmasters, and their names are of interest and worth setting down—Walter Roche and Simon Hunt, both Oxford graduates.

THE MEMORIAL,

as it is compendiously called, consisted of a theatre, a library, and a museum and gardens, in which stands a magnificent statuary group. The site, if cramped, is delightful, for it is bounded by the Avon where it broadens out. On March 6 of the present year, as everyone knows, the theatre was burned down; and, also

as everyone is aware, the catastrophe was the occasion of a joyful sadness, since it is universally agreed that the theatre was both inconvenient in use and not good to look upon. Fortunately, the museum and its treasures were saved; and, still more fortunately, it seems likely that money will be forthcoming for the erection of a worthier memorial on a larger and more suitably situated piece of land. Since the memorial was opened in 1875 the plays have been performed in great variety by leading actors; and in this connection the name of Sir Frank Benson deserves honourable mention. The Library contains about 50,000 volumes, and is probably the finest Shakespeare library in the world. Here, again, are quartos, folios and other rarities, and a comprehensive collection of works about Shakespeare in every language, as well as a vast array of the editions of the plays, English and foreign. Here, too, are the gloves, the chair and the brooch that Shakespeare owned. Sir Henry Irving possessed a fine collection of Shakespearian relics—and they, too, are here. The Picture Gallery is a place of considerable entertainment, even for the most *blasé* specimen of the man-in-the-street. Not only does it contain such precious pictures as the "Droeshout original" (already referred to), but also many modern paintings of an imaginative kind—as "Shakespeare before Sir Thomas Lucy," by Brooks, and the treatment of somewhat similar themes by Romney, Lawrence, Northcote, Opie and Reynolds. The



RUINS OF MEMORIAL THEATRE

portraits of modern Shakespearian actors and actresses will occupy much of the visitor's time—"Geneviève Ward," by Hugh Rivière, "Forbes Robertson," by Glazebrook, are perhaps the most famous. The full-length portrait of the American actor, Edwin Booth, was presented to the Memorial in 1924 by American Rotarians. Some beautiful windows commemorate Shakespearian actors who fell in the war, and these were unveiled by Ellen Terry in 1925.

Even so brief a sketch as this serves to show with what mystery the life and work of Shakespeare is shrouded; and to study more deeply is hut to deepen the mystery. He who holds the attention of the world so closely and who has invested the smallest detail of his life with deep fascination has left behind him no single line of manuscript, no portrait painted in life-time, and very few clearly authenticated facts of his outward life. The wonder is that so few legends or fantastic theories have arisen. What the future holds of conjecture or fad only time can show. Meanwhile (slightly to misquote)—"the play's the thing."

The photographs, facsimiles and sketches illustrating this article were (except as otherwise indicated) specially made for THE CHEMIST AND DRUGGIST by Mr. R. Cecil Owen, B.Sc.

AN UNSUCCESSFUL PLEA.—In the course of a recent County Court action at Swansea, the defendant pleaded that she had been addicted to chlorodyne, and had not been in a fit state of mind to understand the purport of the deed when she signed it. A medical witness stated that the defendant had taken as much as from three to five bottles of chlorodyne in a day. Judgment was given, however, for the plaintiff.

Trade-marks Applied for

The figures in parentheses refer to the classes in which the marks are grouped. A list of classes and particulars as to registration are given in "The Chemist and Druggist Diary," 1926, p. 309.

(From "The Trade-marks Journal," May 19, 1926.)

- "ERICO"; for chemicals (1). By The Eastern & Russian Trading Co., Ltd., 26 Finsbury Square, London, E.C.2. 464,385. (Associated.)
- "FLURESIT" on octagonal device, including crocodile and letters "J H D" ("J H D" disclaimed); for chemicals (1). By J. H. Ditter, Brückkoblerlandstrasse 15, Hanau-a-Main, Germany. 465,239.
- "BLUE SEAL"; for petroleum jelly, etc. (3). By Chesbrough Manufacturing Co., Con., 17 State Street, New York, U.S.A. 464,132.
- "CHARMA"; for medicines (3). By F. T. Chapman, 11 King Street, Winterton, Scunthorpe, Lincolnshire. 467,433.
- "DORSTER"; for medicinal chemicals (3). By M. T. Evans, 25 Abbotsbury Road, Weymouth. 468,345
- Picture of man in Eastern robes; for medicinal chemicals (3). By R. Gibson & Sons, Ltd., Erskine Street, Hulme, Manchester. 468,520. (Associated.)
- "LOBULINA"; for a diabetes remedy (3). By Institut Séro-Thérapique et Vaccinal Suisse Berne, Laupenstrasse 4A, Berne, Switzerland. 467,825.
- "AROMANILLA"; for vanilla oil (42). By The Aromanilla Co., Inc., 6 Varick Street, New York, U.S.A. 468,799.
- "BEAUVIS"; for meat and malt wine (43). By Beaufoy & Co., 87 South Lambeth Road, London, S.W.8. 455,294.
- "TANACRIA"; for mineral waters, etc. (44). By Kia-Ora, Ltd., 35 Rushworth Street, Blackfriars, London, S.E.1. 468,413. (Associated.)
- "KOMOL"; for goods (48). By N. F. McCarthy Smith, 43 Horsford Road, London, S.W.2. 462,722. (Associated.)
- "S.K." with heraldic device and facsimile signature, "S. Kostitsky" ("S.K." disclaimed); for dentifrices (48). By S. Kostitsky, 168 Avenue de Neuilly, Neuilly-sur-Seine, France. 463,556.

(From "The Trade-marks Journal," May 26, 1926.)

- "VIVO"; for shaving cream (48). By R. Crossley, 29 Lyndhurst Street, Seedley, Manchester. 467,978.
- "NIESO"; for perfumed soap, shaving soap and perfumes (48). By Neihenberg & Co., 8 Junkerstrasse, Merscheid, Solingen, Germany. 467,086.
- "MELUSINE"; for preparations for the skin (48). By W. H. Marsh, Old George House, High Street, Westham, Pevensey, Sussex. 468,803.
- "AU REVOIR"; for perfumery, etc. (48). By J. & E. Atkinson, Ltd., 24 Old Bond Street, London, W.1. 469,205.

(From "The Trade-marks Journal," June 2, 1926.)

- "MILOID"; for a chemical fuel economiser (1). By Grimsby Wholesale Chemical Co., Ltd., 17 Chantry Lane, Grimsby. 467,956.
- "SORBISIL" and "GASIL"; for chemicals (1). By J. Crossfield & Sons, Ltd., Bank Quay, Warrington. 468,236/237.
- "VULCAN"; for chemicals (1). "OASIS"; for medicinal chemicals (3). By The General Chemical and Pharmaceutical Co., Ltd., 57 Church Road, Willesden, London, N.W.10. 469,196/199.
- "VERMOL"; for fertilisers, etc. (2). By C. G. Fox and S. Stockell, 61 St. Mary Axe, London, E.C.3. 465,374.
- "LYPTROL"; for chemicals (2). By Lyptol, Ltd., 2 College Road, Harrow, Middlesex. 467,803.
- Design incorporating word "NUJOL"; for a constipation medicine (3). By Standard Oil Co., Constable Hook, Bayonne, New Jersey, U.S.A. 459,744. (Associated.)
- "ZETO"; for cachets and capsules (3). By P. W. Cole, Arcade Buildings, Station Road, Clacton-on-Sea. 465,374.
- "WEX SPARKLING GRAPE SALINE" on device of glass tumbler and grapes; for a grape juice saline preparation (3). By E. Griffiths Hughes, Ltd., 63 Deansgate Arcade, Manchester. 467,411. (Associated.)
- "CINPEP" under heraldic device, with motto, "SECUNDUS NULLI"; for medicinal chemicals (3). By E. Samuels, 48 Castlereagh Street, Sydney, New South Wales. 467,423.
- "FRUIT SALINE" on label device, including word "ENO" and border of grapes; for a saline (3). By J. C. Eno, Ltd., Lever House, Victoria Embankment, London, E.C.4. 467,597. (Associated.)
- "MAX ZELLER SÖHNE" facsimile signature; 977 Bahnhofstrasse, Romanshorn, Switzerland. 467,643. (Associated.)

- "UGINAL" on oblong shape; for external medicines (3). By Antigerm, Ltd., 12 Broadway Chambers, Hammer-smith, London, W.6. 468,292.
- "ZYROIDS"; for liquorice and menthol pellets (3). By Burgoyne, Burbridges & Co., Ltd., East Ham, London, E.6. 468,335.
- "TIPTIK" under device formed of letters in word; for medicinal chemicals (3). By Alex. Robertson, 52 Moss Street, Paisley. 468,923.
- "DIGESTUS"; for medicinal chemicals (3). By G. C. Foster, 40 Regent House, Regent Street, London, W.1. 468,949.
- "TONOVITE"; for a medicine (3). By New Life, Ltd., 11 Tavistock Square, London, W.C.1. 469,245.
- "LUXOL"; for photographic lamps (8). By The Luxol Safety Light Co., Ltd., 57 Southwark Street, London, S.E.1. 469,150.
- "PARNODAN"; for preparations for the teeth (48). By Wright, Layman & Umney, Ltd., 46 Southwark Street, London, S.E.1. 468,657.
- "EN VISITE HOUBIGANT" with flower device on square shape (flower device disclaimed); for perfumery, etc. (48). By Parfumerie Houbigant, Société Anonyme, 19 Rue du Faubourg Saint Honoré, Paris. 466,733. (Associated.)
- "GRAL"; for all goods (48). By P. P. Mülhens, Glockengasse 26, Köln am Rhein, Germany. 468,129.
- "NORENA"; for perfumery, etc. (48). By Wynter Bros. & Co., Ltd., 13/20 Low Green Terrace, Great Horton, Bradford. 468,289.
- "ASHES"; for perfumery, etc. (48). By A. Bourjois et Cie, 60 Rue d'Hauteville, Paris. 468,463. (Associated.)
- "DUXBAK"; for a preparation for preventing the collection of rain drops on wind screens, etc. (50). By The Dubarry Perfumery Co., Ltd., Hove Park Villas, Hove, Sussex. 469,435.

(From "The Trade-marks Journal," June 9, 1926.)

- "TOTEM"; for chemicals (1). By J. Rudman, Ltd., River Street, Bristol. 469,211.
- "STANDLAC"; for chemicals (1). By Standard Varnish Works, 443 Fourth Avenue, New York, U.S.A. 469,493.
- "COLLOPAKES"; for all goods (1). By S. Cabot, Inc., 141 Milk Street, Boston, U.S.A. 469,573.
- "GENZYME HIGH GRADE STANDARD RELIABLE PLANT FOOD" on strip label; for fertilisers (2). By Forsyth, Jones & Co., Ltd., 14 Southampton Street, Covent Garden, London, W.C.2. 467,077.
- "OTEG"; for egg preservatives (2). By Sozol (1924), Ltd., 20 Copthall Avenue, London, E.C.2. 469,336.
- "CORDINA," "HOMMELOGEN" and "HOMMATOGEN"; for medicines (3). By Aktien Gesellschaft Hommel's Hæmatogen, Josephstrasse 20, Zurich, Switzerland. 466,677; 467,571/572. (Associated.)
- "LA BIOTHERAPIE" with device of crocodile and man bearing standard, with letters "B T" ("B T" disclaimed); for vaccines, etc. (3). By La Biotherapie Société Anonyme, 3 Rue Maublanc, Paris. 467,352.
- "RADIOMALT"; for a medicated malt product (3), and for extract of malt (42). By The British Drug Houses, Ltd., 16-30 Graham Street, City Road, London, N.1. 468,642/643. (Associated.)
- "IODOMOL"; for medicinal chemicals (3). By Bayer Products, Ltd., 31 Basinghall Street, London, E.C.2. 469,015.
- "DUPRO BRAND"; for medicinal chemicals (3). By H. R. Napp, Ltd., 3 and 4 Clement's Inn, London, W.C.2. 469,167.
- "AVENYL"; for medicinal chemicals (3). By The Wellcome Foundation, Ltd., 67 Holborn Viaduct, London, E.C.1. 469,632.
- "COFAX"; for all goods (11). By The Surgical and Chemical Co., Ltd., 19 Charterhouse Street, Holborn, London, E.C.1. 469,591.
- "COSSOR"; for chemical glassware (15). By A. C. Cossor, Ltd., Aberdeen Lane, Highbury Grove, London, N.5. 465,823. (Associated.)
- "REFRACTICON"; for glass (15). By Holophane, Ltd., Elverton Street, Vincent Square, London, S.W.1. 469,294.
- "AUTOLDIN"; for photographic papers (39). By I. G. Farbenindustrie Aktiengesellschaft, Mainzer Landstrasse 23, Frankfurt-on-Main, Germany. 469,587.
- "CEBELLE"; for face powder (48). By H. Brooks, 56 Abingdon Villas, Kensington, London, W.8. 465,836.
- "UKANO"; for perfumery, etc. (48). By J. Dundee, 28 Castle Street, Belfast. 465,446.
- "SOFWYE"; for toilet articles (48). By J. S. Gregson, Ltd., 396 Sauchiehall Street, Glasgow. 466,602.
- "OXO"; for containers, capsules, etc. (50). By Oxo, Ltd., Thames House, Queen Street Place, London, E.C.4. 469,567.

Trade Report

The prices given in this section are those obtained by importers or manufacturers for bulk quantities or original packages. To these prices various charges have to be added, whereby values are in many instances greatly augmented before wholesale dealers receive the goods into stock, after which much expense may be incurred in garbling, packing, etc. Qualities of chemicals, drugs, essential and fixed oils, and many other commodities vary greatly, and higher prices than those here quoted are charged for selected qualities of natural products even in bulk quantities.

42 Cannon Street, E.C.4, June 24.

BUSINESS in the Mincing Lane produce markets continues on restricted lines, and trade buying is quite retail in most articles. As is usual when business is depressed, the number of claims to be settled by arbitration has grown considerably of late in Mincing Lane, these chiefly relating to Continental contracts. Were times more prosperous these questions of quality would be infrequent. Among crude drugs, agar agar is dearer on spot and for forward shipment. Sudan gum acacia is firmer. Matto Grosso ipecacuanha remains firm, and juniper berries are very scarce on spot. Kola is in better supply, while natural liquorice root is dearer. Opium has advanced 1d. per unit, and spot stocks have considerably diminished. Beeswax is firm. Among the essential oils, lemon has been sold at higher rates for shipment, but demand generally is still slow. Bourbon geranium is dearer at the source, and any offers made are not firm. Japanese peppermint is neglected. Ceylon and Java citronella are quiet and easier. In the pharmaceutical chemicals group, business continues on limited lines and prices are fairly steady. Mercurial salts have been advanced by makers by 3d. per lb. all round in consequence of the high price of metal, which has every appearance of being stringent for some time. Foreign tartaric acid is rather firmer; calcium lactate is easier. Among industrial chemicals the depression has become more marked, owing to the coal-mining dispute; prices, however, are fairly steady and show little change. Lead products are unsettled and inclined to weaken. Potassium and sodium chlorate are the turn easier. Business in coal tar products has again been very poor. Among the so-called vegetable oils, less business has been done: all grades of palm oil are easier; linseed is irregular, with a tendency to cheaper rates, and turpentine is steady.

Higher	Firmer	Easier	Lower
Agar agar	Citronella oil	Calcium lactate	Mandarin oil
Albumen	(J.v. c.i.f.)	Coriander seed	Vetivert oil
Gum acacia	Cocoa butter	Lavender oil	Wormseed oil
Mercurials	Lemon oil	Linseed	
Mustard seed	Pimento	(Mazagan)	
Opium	Shellac	Linseed oil	
	Tartaric acid	Palm oil	
	Wax, carnauba	Potash chlorate	
		Sodium chlorate	

Cablegrams

NEW YORK, June 24.—Business is dull. Belladonna root has advanced to 19c. per lb. Peppermint oil is cheaper at \$13.50 per lb., and senega has declined to 58c. per lb. Burdock root is lower at 9c., and balsam peru has been reduced to \$1.75 per lb.

BERGEN, June 24.—The catch of cod since the opening of the season amounts to 89,100,000, against 60,100,000 at the same date of last year, and the yield of steam-refined medicinal cod-liver oil 120,954 hectolitres, against 94,453 hectolitres at the corresponding date of last year. The fishing at Finmarken is now closed. The quotation for finest non-freezing steam-refined Lofoten oil is about 395s. per barrel, c.i.f. London.

Crude Drugs, etc.

AGAR AGAR is dearer. In reply to orders sent out at 3s. 3d. per lb. c.i.f. for Kobe No. 1, prices come to hand at 3s. 5d. to 3s. 6d. per lb. c.i.f. for July-August shipment. The former cheap sellers have withdrawn and are holding for prices nearer their cost. Kobe No. 1 on the spot is quoted at 3s. 8d. to 3s. 9d. per lb.

ALBUMEN has advanced to 3s. 3d. per lb. on the spot for prime Chinese egg, and to 3s. 2½d. c.i.f. for June-August shipment.

ANTIMONY is unsettled, with no indication of any improvement in the trade demand, although the feeling in China is reported not to be so depressed as it was, but it is believed that large stocks are available there. Chinese regulus on the spot is worth about £60, while c.i.f. terms for shipment are made at about £42 10s. English refined is still held for £84 10s. to £85, and selling in small quantities. Crude is difficult to quote, being, however, about £40 on the spot and £30 c.i.f. for shipment.

CADE OIL.—Genuine French oil is quoted at 11d. per lb.

CADMIUM is quiet, but there is a fairly steady demand for Australian metal at the comparatively low figure of 1s. 9d. per lb., while American is quoted 1s. 11d.

CAMPHOR (REFINED) is quiet, with Japanese slabs offering at 3s. 1½d. to 3s. 2d. per lb. on the spot.

CARDAMOMS.—An auction of 356 cases Ceylon and Indian was held on Thursday, June 24.

CLOVES.—Zanzibar continue quiet, with spot offering at from 9½d. to 10½d. per lb. as to quality. August-October shipment is nominal at 10½d. c.i.f. The landings in London during the week ended June 19 were *nil* and the deliveries 250, leaving a stock of 15,825 bales, against 13,238 bales in 1925 and 32,581 bales in 1924. Up to June 19 the landings of Zanzibar in London have been 9,650, against 7,498 in 1925, while the deliveries amount to 8,025, against 9,264 last year.

COCOA BUTTER is ½d. per lb. higher at 1s. 4½d. per lb. for C.F.R., and prime English in not less than one-ton lots.

COD-LIVER OIL.—Our Bergen correspondent writes on June 21 that the catch at Finmarken was rather good again last week, in consideration of the advanced season. The total output of all the Norwegian cod-fisheries, compared with that of previous years, is as follows:—

To	Catch of cod	Yield of steam-refined cod-liver oil	Livers for crude oils
June 12, 1926	86,500,000	116,088 hectol.	14,339 hectol.
" 13, 1925	58,600,000	90,950 "	9,654 "
" 14, 1924	67,000,000	111,748 "	17,638 "
" 9, 1923	48,200,000	81,012 "	16,847 "
" 10, 1922	47,200,000	78,259 "	14,827 "

The fishery at Finmarken closed on June 21. The official quotation for non-freezing steam-refined quality is unaltered at 105s. per barrel, c.i.f. London.

CORN PRODUCTS, ETC.—Guaranteed water-white *glucose* (corn syrup) is 20s. 9d. per cwt. for June-August delivery, ex store, London. Dutch *maize starch powder* (cornflour) is 13s. 9d. per cwt. on the spot. American, for June-August delivery, 13s. 6d. per cwt. Pearl starch for June-August delivery is 13s., ex store, London. Dutch *farina* is 14s. 6d. per cwt. on the spot, and 13s. 7d. f.o.b. for prompt shipment. Dutch *maize starch crystals* is 20s. 6d. on the spot, and American for June-August delivery is 20s. 3d. per cwt. ex store London. Dutch *dextrin* is 24s. 6d. per cwt. for superior, on the spot. American canary for June-August delivery is 17s. 3d., and white for June-August 17s. per cwt. ex store London.

DRAGON'S BLOOD.—Sales of reboiled Singapore of extra fine quality have been made at £33 10s. per cwt.; ordinary reboiled, slightly mixed with dull, can be had at £28 to £29 per cwt.; dull slab has changed hands at £13 per cwt., and for Zanzibar drop from £8 to £8 10s. per cwt. is quoted.

GUM ACACIA is dearer, natural Kordofan sorts offering at 51s. per cwt. on the spot, and at 46s. c.i.f. to arrive; cleaned is 56s. spot and 48s. c.i.f. to arrive.

IPECACUANHA.—Matto Grosso remains firm at 14s. 6d. per lb., Minas is 13s. 6d., and Cartagena is very scarce with practically nothing offered. The "Highland Loch" has brought 26 bales Matto Grosso from Monte Video.

JUNIPER BERRIES are very scarce on spot, and are likely to continue so until the new crop is available in the late autumn.

KOLA is now in better supply on the spot, fair Ceylon and West Indian offering at 3d. to 3½d. per lb.

LIQUORICE ROOT.—Natural is dearer with practically nothing available on the spot, but some is now landing; up to 16s. per cwt. has been paid for common natural.

MAGNESIUM is steady with a fair demand, quotations being 3s. 9d. to 4s. 3d. per lb. for small ingots and sticks as quoted by home makers, and powder ranges from 5s. to 6s. per lb., according to quality.

MERCURY.—The position continues very healthy, but the spot demand has again been slow, and we hear that holders in some cases might make concessions to about £15 5s. for round lots of, say, 100 bottles. Quotations, however, range from £15 5s. to £15 10s. per bottle, the higher figure being for small lots, these figures being less 3 per cent. discount. Recently about 100 bottles were shipped to Japan and 200 bottles to China, but export business at the moment is again very quiet. Imports last month were small, amounting to 1,138 bottles, this making an aggregate of only 6,166 bottles since January 1, compared with 9,351 bottles for the corresponding period last year. There is not much offering from the Continent, nor is there much to be looked for from Spain since the usual summer interruption has taken place in operations at the mines there. Salts of mercury have advanced by 3d. per lb.

MYRRH.—Stocks on the spot are gradually diminishing and these supplies are the remainder of the imports of some years ago, when valuations were much higher. Sellers are obtaining 40s. per cwt. for common grade; fair Aden sorts are quoted at 70s. to 80s., and fine quality 90s.

OPIMUM is dearer, and what little there is now on the spot is limited at 2s. 3d. per unit for usual 11 per cent. Turkey druggists'. The bulk of the new crop will not be ready for shipment until July-August.

CONSTANTINOPLE, June 15.—"During the period May 31 to date arrivals were as follows:—Druggists', 2,169; 'softs', 348; and Malatia, 324 cases. Stocks amounted to:—Druggists', 53; 'softs', 12; and Malatia, 80 cases. The reduced stocks, in conjunction with unfavourable reports regarding the crop, gave rise to the hope that the yield of Malatia might prove satisfactory. However, heavy rains during the past few days have done damage in some parts, particularly in the districts where Malatia is produced. Importers in the interior, who this year are short of goods, such as mohair and wool, appear to take an interest in opium. In our opinion, prices will be maintained during the first months of the crop, provided the weather remains favourable."

PEPPER has been quiet throughout. Fair black Singapore is easier at 10½d. to 10¾d. per lb. on the spot, at which sales have been made. To arrive, June-July shipment is 9½d. c.i.f. (value). Lampong is 10½d. to 10¾d. spot; to arrive, sales include May-July at 8½d. to 9¾d. to 9½d., August-October 7½d. to 8½d. to 8¾d. c.i.f.; Telli-cherry is 11½d. spot, and August-September 11s. c.i.f.; Alleppy 11d. spot, and August-September 11s. c.i.f. White Muntok pepper is firm at 1s. 4½d. spot; to arrive, sales include June-July 1s. 3½d. to 1s. 4d., and August-October 1s. 2d. to 1s. 2¾d. c.i.f.; f.a.q. Singapore is 1s. 4½d. spot, and June-July 1s. 4d. c.i.f.

PIMENTO is firmer, with spot sales at 5¾d. per lb., sellers asking 6d., and for June-July shipment 5s. per cwt. c.i.f. has been paid.

RUBBER is practically unchanged, except for the forward positions, which are slightly better on account of a certain amount of speculative buying. During the past week there has been an entire absence of any spot demand, and June position, which was formerly at a premium, is almost 1d. discount under the October-December position. There now appears to be a battle royal between the "bulls" and "bears" on the question as to whether the price of 1s. 9d. will be the average for the May-July quarter. It means that if there is to be a reduction of 20 per cent. on August 1 the price until that date will have to average around 1s. 8½d. During the past week arrivals amounted to 1,801 tons and deliveries 1,418 tons, thus showing a further increase of 383 tons in the stocks. The London stock now stands at 22,664 tons. Quotations (Wednesday, 5 p.m.): No. 1 standard ribbed smoked sheet, spot and June, 1s. 8½d.; July-September, 1s. 8¾d.; October-December, 1s. 9¼d. per lb.

SEEDS.—Business in the seed market is unchanged and the demand continues limited with prices a shade easier, demand being exceedingly quiet, and prices are as follows:—**CANARY SEED.**—Mazagan is offered on the spot at 24s. 6d., Larache is quoted at 22s., and good bold Spanish 35s. Dutch is offered at 17s. c.i.f. **CUMIN SEED.**—Maltese is 32s. 6d., and Morocco 27s. 6d. to 30s. **ANISE.**—Spanish is 50s., Russian 41s., and Levant 40s. **CORIANDER SEED.**—Morocco, 15s. for sound on the spot and 13s. 6d. per cwt. c.i.f. **DILL SEED,** 20s. per cwt. **FENUGREEK SEED.**—Morocco is 12s. 6d. per cwt. on the spot and 10s. 6d. c.i.f. **HEMPSEED.**—Manchurian is 13s. 6d. per cwt. **LINSEED.**—Mazagan is quoted at 19s. 6d. per cwt., c.i.f. **MUSTARD SEED.**—English is scarce at 60s. per cwt. on the spot.

SENEGA is firm for prompt shipment from New York at 2s. 7d. per lb. c.i.f. Recent quotations have ranged from 2s. 5¾d. to 2s. 6½d. c.i.f. New crop for July-August or July-September shipment has been sold at about 2s. 5d. c.i.f.

SHELLAC is firmer on the spot, usual standard TN orange quality offering at 125s. to 130s. per cwt.; fine orange is 135s. to 180s., and AC cakey 130s. To arrive, TN for May-June shipment has been sold at 116s. c.i.f. The sales for delivery include August at 122s. to 126s., and October at 120s. to 124s. per cwt. Calcutta spot is rs. 50.

TURMERIC is rather firmer, fair Madras finger offering at 21s. per cwt. c.i.f.

VANILLA.—Fair sales of Bourbon have been made on the spot at the recent lower levels. Value of firsts, average length, is about 14s. to 15s. per lb.

WAX, BEES', sells steadily at firm rates; £9 per cwt. c.i.f. has been paid recently for Benguela block. The depreciation in the franc makes Madagascar easier at 172s. 6d. c.i.f., but this quality is less esteemed than the genuine East African.

Essential Oils

INTEREST has been noted in Bourbon geranium, which is firmer at the source, and in Java citronella, which is also dearer to arrive following fair sales. Lemon has met with inquiry, but demand is still much below normal. Japanese peppermint is nominal on the spot, but there is bidding for forward shipment. French lavender has been sold at low rates, and Bourbon vetiver is cheaper. American wormseed has declined slightly. Mandarin is lower.

ANISE (STAR).—"Red Ship" on the spot is steady at 2s. 10½d. per lb., at which sales have been reported. For June-July shipment 2s. 5½d. c.i.f. is quoted, in 15 to 20-case lots.

BERGAMOT is unchanged at last week's quotation, at from 25s. 6d. to 26s. per lb. for 37 to 38 l.a. For shipment, from 24s. 6d. to 25s. c.i.f. is asked.

CARAWAY.—Dutch double-rectified on the spot is quoted at from 5s. 3d. to 5s. 9d. per lb. as to quantity.

CASSIA on the spot is unchanged at 8s. per lb. for 80 to 85 c.a., and 6s. 6d. c.i.f. for shipment.

CEDARLEAF.—American is steady at 5s. per lb. on the spot.

CEDARWOOD.—American is unchanged at 1s. 1½d. per lb. in drums, and 1s. 4d. in cases.

CITRONELLA.—Ceylon on the spot is cheaper at 1s. 7d. per lb. and 1s. 6d. c.i.f. to arrive. There has been more inquiry for Java, which declined during the week to 2s. c.i.f. and has since improved to 2s. 2d. c.i.f.

ETCALYPTUS on the spot is quiet and unchanged at 1s. 7d. per lb. for 70 to 75 per cent., with sales recorded of single cases at the price. There has been fair inquiry for shipment, and buyers have been asked to make bids. Recent quotations have been made at from 1s. 7d. to 1s. 7½d. c.i.f., without business resulting.

GERANIUM.—Bourbon has advanced at the source, and while it is difficult to obtain offers, the value is now at least 170 fr. per kilo, c.i.f. (= 9s. 3d. per lb., c.i.f.). Further large sales have been reported. On the spot the nominal quotation of 10s. is made. More interest has been shown in Algerian, for which 8s. 6d. c.i.f. is quoted, but recent sales have been made at less. Spot is nominal at 10s.

GINGERGRASS is quoted at 7s. 9d. per lb. c.i.f. to arrive.

LAVENDER.—French oil, 38 to 40 per cent. esters, has been inquired for recently. While the basic franc price is unchanged, the decline in exchange value enables offers to be made at from 14s. to 15s. per lb. delivered. Up to 13s. is quoted for spot as to holder.

LEMON.—The seasonal demand appears to be still lacking, although quotations at the source are inclined to be firmer at from 7s. 4d. to 7s. 6d. per lb. c.i.f., and sales of good

brands have been made at the higher figure. During the week down to 7s. c.i.f. was quoted. On the spot, from 7s. 6d. to 7s. 9d. is asked.

LEMONGRASS.—Cochin is slightly easier at 3s. 7½d. per lb. on the spot. Sales have been made for shipment recently, the current quotation being steady at about 3s. 5d., c.i.f.

MANDARIN is cheaper on the spot, with sellers at from 24s. 6d. to 27s. 6d. per lb. as to brand.

PALMAROSA in original pots is quoted at 9s. 6d. per lb., and for shipment 9s. c.i.f.

PATCHOULI.—Penang of usual quality is steady at from 21s. 6d. to 22s. 6d. per lb.

PEPPERMINT.—American natural is steady at about 63s. per lb. There is only a small demand. Japanese demethylated is nominal at 8s. Bids have been made of 7s. c.i.f. for July-August shipment.

PETITGRAIN.—Paraguayan is unchanged on the spot at from 7s. 6d. to 7s. 9d. per lb.

SPIKE.—Rather more demand has been experienced during the past week at steady rates, from 3s. 9d. to 4s. per lb. being the current quotation for fair quality Spanish.

VETIVER.—Small spot lots have been selling at 38s. 6d. per lb. For shipment from Marseilles, 35s. c.i.f. is quoted. Java oil is quoted at 47s. 6d., f.o.b. Amsterdam.

WORMSEED.—American is slightly cheaper on the spot, with quotations at from 22s. 6d. to 23s. per lb. as to quantity. For shipment 21s. 6d. c.i.f. is quoted.

The following arrivals at London have taken place from the countries indicated during the period June 2 to 9 (inclusive): Bergamot (It.), 130 cs., 1 dm.; camphor (Jp.) 56 cs., (Ger.) 10 dm.; cinnamon (Ger.), 1 cs.; citronella (Jv.), 19 dm.; fennel (Fr.), 1 cs.; geranium (Fr.) 2 dm., (Réun.) 2 dm.; lemon (It.) 288 cs., 6½ cs., (Ger.) 1 cs.; lemongrass (Br. Ind.), 2 dm.; orange (It.) 71 cs., (B.W.I.) 40 cs.; orris (Fr.), 5 cs.; patchouli (Seych.), 3 cs.; peppermint (Jp.), 140 cs.; petitgrain (Fr.), 3 cs.; rose (Anatolia), 1 cs.; rosemary (It.), 1 dm.; spearmint (U.S.), 1 cs.; thyme (Fr.), 1 cs. Undescribed: (Fr.) 14 cs., (Holl.) 2 cs., (Ger.) 1 cs., (Switz.) 1 cs.

Pharmaceutical Chemicals, etc.

THE general industrial conditions do not appear to have affected this market to any large extent. Business has been fairly good on limited lines and prices are quite steady. Tartaric acid shows an advance on a more active market. Mercurials have been advanced 3d. per lb.

ACETANILIDE continues to be quoted on spot at about 1s. 7d. per lb. for B.P. crystals and powder, with business quiet.

AMPHOPYRIN is offering at about 12s. 6d. to 12s. 9d. per lb., but business remains poor.

ASPIRIN.—Fair business has been done at very competitive rates: about 2s. 4d. to 2s. 4½d. per lb. is quoted, according to quantity, for best brands.

BARBITONE remains slack at about 9s. to 9s. 3d. per lb.

BENZOIC ACID (B.P.).—A moderate business continues, with prices unchanged: British B.P. from 2s. 1½d. per lb., ex works, and more for small quantities; Continental, practically free from chlorine, spot, 3s. 3d. per lb.

BENZONAPHTHOL continues to be quoted at about 3s. 3d. per lb., in five-kilo parcels, with business poor.

BROMIDES.—There is still a lack of important business, but quoted prices continue unchanged: ammonium, about 2s. 3d. per lb., in cases; potassium, B.P. crystals and granular, 1s. 8½d. to 1s. 8¾d. per lb.; sodium, B.P., 1s. 10d. to 1s. 10½d. per lb.

CALCIUM LACTATE is rather easier, so far as dealers are concerned, and something less than the quoted price of 1s. 3d. per lb. would be accepted for quantities; British makers' list price for quantities is 1s. 2¾d. per lb., ex works.

CHLORAL HYDRATE continues steady, but on the quiet side, at about 3s. 3d. to 3s. 3½d. per lb.

CITRIC ACID (B.P. crystals).—Business has been limited to small lots at about 1s. 3½d. to 1s. 3¾d. per lb., less 5 per cent.

CREOSOTE, B.P., is offered at about 1s. 10d. per lb. for small parcels; market dull.

CREOSOTE CARBONATE is still dull at about 6s. per lb.

GUAIACOL CARBONATE is unchanged on quotation at about 7s. 3d. per lb., but business is slow.

HEXAMINE is steady but slow of sale: dealers quote from 2s. 4d. to 2s. 5d. per lb., according to quantity.

HYDROQUINONE is steady, with occasional business of limited size: quoted from 4s. 3d. to 4s. 6d. per lb.

LACTIC ACID (B.P.).—Dealers are offering quantities in demijohns at 2s. 3½d. to 2s. 4d. per lb.; market quiet; technical, 50 per cent. by weight, £41 10s. per ton, net.

MENTHOL (SYNTHETIC).—English makers quote from 12s. 6d. to 15s. per lb., according to quantity.

MERCURIALS.—On June 22 the makers announced an advance of 3d. per lb. all round in the price of mercury

salts. The following are the list prices, and below one-cwt. lots: Hyd. ammon. B.P. (white precipitate), 4s. 11d., powder 5s.; hyd. oxid. rub. (red precipitate), 6s. 1d.; levigated B.P., 5s. 7d.; hyd. oxid. nav., 5s. 5d.; hyd. perchlor., lump (corrosive sublimate), 4s. 5d.; powder and granular, 3s. 11d.; hyd. persulphate, 4s. 8d.; commercial, 4s. 5d.; hyd. subchlor. (calomel), 4s. 8d.; hyd. sulph. nig., 4s. 5d. One-cwt. lots are 1d. per lb. less.

METHYL SALICYLATE shows no change, with the price for quantities, in carboys, about 1s. 4½d. per lb.; business s.o.w.

METHYL SULPHONAL is easy on a dull market at 15s. 9d. per lb.

MILK SUGAR.—Dealers' prices unchanged: German, B.P., 64s. to 65s. 6d.; finest Dutch, B.P., 68s. to 70s. per cwt., in cases.

PARAFORMALDEHYDE (100 per cent. powder) is steady and in fair demand: quoted from 1s. 9d. per lb., in quantities.

PARALDEHYDE remains quiet and unchanged at 1s. 2d. to 1s. 4d. per lb., according to quantity and quality.

PHENACETIN continues steady, although not in much demand: quoted from 3s. 11d. to 4s. per lb., and perhaps a shade less for large quantities.

PHENAZONE is quiet except for small spot business: dealers' prices are steady at 5s. 11d. to 6s. per lb.

PHENOLPHTHALEIN is well maintained and only large parcels are offered at 4s. per lb.; ordinary quantities, from 4s. 1d. per lb.

POTASSIUM PERMANGANATE (B.P.).—Only a limited business is reported and quotations are keen, in the region of 6½d. to 7d. per lb., in drums.

POTASSIUM SULPHOGUAIACOLATE attracts little attention: dealers quote at about 5s. 3d. per lb.

RESORCIN continues steady, with prices inclined to harden up to the higher price of close up to 5s. 6d. per lb.; some offers may still be at 5s. 3d. per lb.

SALICYLIC ACID (B.P.) continues rather slow, with keen competition for any business: dealers quote from about 1s. 3d. per lb. for five-cwt. parcels; British makers' prices about level; technical, 10½d. per lb., ex works.

SALOL is quoted at about 3s. 3d. per lb., with business quiet.

SODIUM BENZOATE (B.P.).—Cheap parcels for forward delivery are on the market: spot, about 1s. 7½d. to 1s. 8d. per lb.

SODIUM DIETHYLBARBITURATE is unchanged at about 10s. per lb., with the market very flat.

SODIUM SALICYLATE (B.P.) is steady but not at all active: crystals, about 1s. 10d.; powder, about 1s. 9d. per lb., for quantities.

SULPHONAL is easy on a dull market at about 10s. 9d. per lb.

TANNIC ACID.—B.P. *lexiss* is steady at from 2s. 8d. per lb. upwards; market quiet.

TARTAR EMETIC is unchanged as quoted to arrive at about 11½d. per lb. for 43 to 44 per cent. technical; B.P., about 1s. 10d. per lb.

TARTARIC ACID (B.P. crystals).—This market shows an advance, with the spot price now up to 11¾d. per lb., less 5 per cent. for quantities; the forward position is rather dearer than this; business has been moderate.

TERPIN HYDRATE remains flat, with the price easy at about 1s. 8d. per lb.

THYMOL is steady but in no great demand: quoted at about 12s. per lb. for B.P. fine white.

VANILLIN is quiet, with prices varying from about 20s. 6d. to 22s. 3d. per lb.; sales of quantities would be at lower prices.

Among the chemicals which have paid Key Industry Duty are the following: Ammon. and potash bromide cryst., £660; butyl alcohol, £2,072; cellulose acetate, £1,061; dimethyloxyquinone, £115; cocaine hydrochloride, £108; ethyl carbonate, £118; hydroquinone, £308; formic acid, £142; isopropyl alcohol, £101; milk of magnesia, £655; salicylic acid, £187; undescribed chemicals, £3,104.

Industrial Chemicals, etc.

London, June 23.

CONTINUED depression of a very marked character is reported from all quarters. Consuming industries are now working very limited hours, and in consequence the demand for heavy chemicals remains negligible. Prices, however, continue fairly steady and show little change.

ACETIC ACID is unchanged, with the market dull and easy: 80 per cent. technical, £37; 80 per cent. pure, £38 per ton, in barrels; glacial, pharmaceutical, 99 to 100 per cent., £65 10s., in glass demijohns; glacial, in barrels, £55 per ton, ex wharf.

ACETONE has been in as good demand as can be expected and is steady at about £80 per ton for B.G.S., in drums.

ALUM remains very quiet at about £8 15s. per ton for lump, in casks; cheaper prices for forward delivery.

AMMONIA (ANHYDROUS).—A small spot business continues, otherwise the market is flat: spot, 99.95 per cent., 1s. 1½d. per lb., in loaned cylinders, carriage paid.

AMMONIUM CHLORIDE continues dull on spot, with grey galvanising offered at about £22 per ton, in casks, and at cheaper prices to arrive.

ARSENIC continues quiet and the nearest quotation is £13 5s. per ton f.o.r. for white Cornish, buyers being reluctant to concede even this figure for the present.

BARIUM CHLORIDE is steady but slow of sale, with spot parcels of 93 to 100 per cent. prime white crystals at about £10 10s. per ton, in casks; forward delivery is offered at lower prices.

BARYTES is steady but quieter at from £3 7s. 6d. to £5 15s. per ton, c.i.f. U.K. port, according to quality and quantity.

COPPER SULPHATE.—Export trade competition has been very keen, and it is now apparently easy enough to place orders at between £24 and £23 10s. f.o.b. for casks, less 5 per cent. Demand is anything but active. Home exports for last month were 4,026 tons, or about 2,600 tons less than for the previous month. The total for the five months is 27,031 tons, against 29,549 tons for January-May last year.

CREAM OF TARTAR.—Prices hold quite steady, but business is poor: B.P. is quoted at 76s. to 77s. per cwt., less 2½ per cent., according to quantity.

EPSOM SALT remains dull but steady at about £5 2s. 6d. per ton for spot parcels of commercial quality, in bags; cheaper prices are quoted for quantities to arrive.

FORMALDEHYDE is very dull and the quoted price of £40 per ton for 40 per cent. by volume is weak.

GLAUBER'S SALT remains quiet so far as spot business is concerned at about £3 12s. 6d. to £3 15s. per ton, in single bags, ex store; cheaper prices for forward delivery in quantities.

LEAD PRODUCTS.—Lead acetate, brown, £41; white, £42 15s. per ton, spot; red lead, imported, £36 10s., c.i.f. London, market steady; white lead, dry, £35 15s.; ground in oil, £37 15s., c.i.f. London. The market was rather unsteady to-day and is inclined to weaken a little; business has been quite good.

LITHOPONE remains dull, but the market is steady, with good brands of 30 per cent. Continental red seal at £21 per ton, in casks, spot; slightly cheaper prices forward.

OXALIC ACID is dull and remains at low prices: quoted at about 5½d. per lb. for quantities.

POTASH CAUSTIC keeps steady under the Convention with the spot price of 83 to 92 per cent. solid at £27 10s. per ton, in drums; cheaper prices for contracts for forward delivery.

POTASSIUM CARBONATE is difficult to move in any quantity, but prices appear steady: 90 to 92 per cent., £24 10s.; 96 to 98 per cent., £25 10s. per ton, in casks, spot; cheaper prices for forward delivery.

POTASSIUM CHLORATE has been dull and is a shade easier: powder, 3½d.; crystals, 4d. per lb.

POTASSIUM PERMANGANATE is steady, with keen competition for the limited business on hand: quoted from 5½d. to 5¾d. per lb., in drums.

POTASSIUM PRUSSIAN is very steady under the syndicate price: quoted on spot at about 7d. per lb.; cheaper forward.

SAL AMMONIAC.—Business has again been disappointing, but prices are maintained: dog-tooth crystals, £30; medium, £23; fine white crystals, £19 10s. per ton, in casks, spot; cheaper prices to arrive.

SODIUM ACETATE is quoted on spot at about £20 5s. per ton, with cheaper prices for July-August delivery.

SODIUM CHLORATE has been dull and is rather easier at about 3½d. per lb.

SODIUM HYPOSULPHITE.—Dealers have done a little business, with prices steady: pea crystals, about £15 7s. 6d. per ton, in one-cwt. kegs; commercial quality, £9 per ton, in casks; British makers' price for pure crystals for home consumers, £15 10s. per ton, carriage paid to buyer's station.

SODIUM NITRATE remains dull, with 95 per cent. quoted at £13, and refined at £13 5s. per ton, f.o.r. docks, London; Liverpool prices 2s. 6d. per ton less.

SODIUM NITRITE is quiet, but prices continue unchanged at about £21 per ton and 22s. per cwt., docks, London; Manchester prices lower.

SODIUM SULPHIDE remains flat: 60 to 62 per cent. solid, £11 5s.; broken, £12 5s. per ton, in drums.

COAL-TAR PRODUCTS, ETC.—Business has again been very poor, but prices are steadily maintained, and one or two advances are recorded. These movements are due to shortage rather than any good demand. **ANILINE SALT** is about 7d., packages extra, carriage paid, as quoted by British makers; market flat. **ANILINE OIL** remains dull at 6½d. to 6¾d. per lb., in loaned drums, carriage paid. **BETANAPHTHOL** is steady but not at all active: quoted in the region of 11½d. per lb., carriage paid. **TOLUOL** is steady as quoted, but business is not at all brisk: commercial 90's, 1s. 8½d. to

1s. 9d.; pure, about 2s. per gallon, f.o.r. works. **XYLOL** remains very quiet at unchanged prices: pure, 3s.; commercial, 2s. 3d. per gallon, f.o.r. works. **CARBOLIC ACID** crystals continues to be quoted at about 4½d. per lb. f.o.b. in quantities; business has again been very light. **CRESYLIC ACID** is offering at about 1s. 8d. per gallon for pale 97 to 99 per cent., but business is lacking. **CREOSOTE OIL** is very steady as supplies are limited, but business is poor: ex works, 6½d. to 6¾d.; f.o.b., 7d. to 7½d. per gallon, in quantities. **NAPHTHALENE** remains idle: flakes, £14 7s. 6d.; powder, £12 5s.; crystals, £11 10s. per ton, ex wharf. **Pure METHYL ALCOHOL** is unchanged, with one-ton lots at about £47, in drums, ex wharf; cheaper prices for quantities. **PYRIDINE** is still very quiet, with the quoted price about 17s. 6d. per gallon, f.o.b. **PITCH** is neglected, with the price nominal at 77s. 6d. to 80s. per ton, f.o.b. East Coast.

Fixed Oils, etc.

RATHER less business has been transacted this week, and some items are showing weakness, tending to move to easier rates. **Turpentine** is steady. **Linseed oil** is irregular and palm oils unsteady. **ACID OILS** are quiet with values unchanged: coconut and palm kernel, 40s.; groundnut, 36s.; soya, 33s., spot. **CASTOR** is unaltered: pharmaceutical, 50s.; first pressings, 45s.; second pressings, 42s. per cwt., spot, in barrels, in not less than one-ton lots. **COCONUT** is firm but quieter: deodorised, 54s.; Ceylon, 50s., c.i.f.; Cochin, 50s., c.i.f. **COTTON** is much quieter and prices are easy as quoted: deodorised, 49s.; common edible, 47s.; soap-making, 45s.; crude, 41s. 6d., spot. **GROUNDNUT** is quiet but fairly steady: deodorised, 55s., spot; crude Oriental, 47s. 6d., c.i.f. **PALM KERNEL** is quiet, with the market steady: deodorised, 49s. 9d.; crude, about 47s. 6d., spot. **PALM.**—Business has been quiet throughout the week and prices are easier for all grades: Lagos, 38s. 6d.; softs, 38s. 6d.; mediums, 38s. 9d.; hards, 39s.; bleached, 41s. 3d., spot. **RAPE** is dull but fairly steady: refined, 55s.; crude, 53s., spot. **SOYA.**—Deodorised, in barrels, on spot is steady at 44s. 9d.; crude, 42s. 6d., spot. **LINSEED (raw, naked).**—To-day the market is irregular and there is some pressure to sell, tending to move to easier rates: on spot, 34s. 3d.; June-August, 33s. 1½d.; September-December, 33s. 4½d.; January-April, 33s. 1½d.; boiled oil, spot, 34s. 9d. Hull, on spot, 33s. 6d.; July-August, 33s. 6d.; September-December, 33s. 6d.; January-April 33s. 3d. **TURPENTINE.**—Quotations have shown improvement on the week, chiefly in view of the continued tightness in spot delivery and owing to firmer American cables. The market on Wednesday, however, became rather quieter on a decreased inquiry and closed at 70s. 6d., June 70s., July-December 61s. The London deliveries for last week were much smaller at 1,877 barrels, making the total since January 1 56,234 barrels, against 44,894 barrels same period last year. Stocks were returned at 10,144 barrels, which, with the quantities landing and afloat, made the visible supply 16,609 barrels, compared with 21,230 barrels same date last year. **RESIN** prices advanced sharply again, due to the general large demand. Stocks in America are not increasing in spite of the incoming crop, and the daily receipts are keenly competed for. C.i.f. terms range from 25s. 10½d. to 30s. 4½d. for the lower to medium grades, while W.G. stands at 32s. 6d. and W.W. at 33s. Terms ex wharf show a premium of 6d. over these figures except for W.W., which is very scarce and commands fancy prices. **WOOD.**—Hankow, in barrels, on spot is quiet and unchanged at 67s. per cwt. and June-July at 65s. c.i.f.

LUBRICATING, MINERAL, BURNING OIL, ETC.—A fair volume of business is reported in some products and the general tone of the market continues quite steady. **BENZOL** is now firm and tends to harden a little: crude 65's, 1s. 3½d.; standard motor, 1s. 8½d. to 1s. 9d.; pure, 1s. 11½d. to 2s. per gallon, ex works, in tank wagons. **FUEL OIL** is steady, with fair business: 890 gravity, £3 17s. 6d.; 950 gravity, £4 7s. 6d. per ton, ex tank. **PARAFFIN WAX and SCALE.**—Wax is steady but rather quiet at from 3½d. to 4½d. per lb., according to melting point, in bags. **Scale** is firm, with the shipment quotation at about £27 per ton, c.i.f. U.K. port. **PARAFFIN OILS** are firm and unchanged: American standard white, 1s. 1d.; water-white, 1s. 2d. per gallon, barrels free; Russian prime white kerosene, 6½d. to 7d., ex tank, 7½d. buyers' barrels filled free, and 11d. per gallon, barrels free, ex wharf, London. **WHITE OILS.**—Prices continue at last week's reduced rates: special No. 1, £27; No. 1, £25 10s.; No. 2, £23; No. 3 half-white, £22; No. 4 half-white, £15 per ton, drums and barrels free, ex wharf. **SOLVENT NAPHTHAS** are steady but quiet: 90 to 160, 1s. 4½d.; heavy 90 to 190, 1s. per gallon, f.o.r. works. **PETROLEUM JELLIES** continue unchanged, but business is quiet: white to snow-white, £49 10s. to £53; amber and yellow, £17 17s. 6d. to £22 10s.; red vet, £15 7s. 6d.; dark stiff green, £13 per ton.

German Bromine Convention

In further reference to the note on p. 729 of our issue of May 29, the following official information has been received from the Deutsche Brom-Konvention by a London firm:—When the Deutsche Brom-Konvention was formed in September last no time of expiration of the agreement was stipulated. It was only agreed upon that each member of the combine be at liberty to discontinue membership at the close of any year, provided a three months' notice be given. It is therefore not correct to speak about a renewal of our Convention. As regards the recent report of the American Trade Commissioner in Berlin, we are in a position to declare that the statements made were based upon inaccurate information. In this connection we may mention that the local American Trade Commissioner with whom we had a discussion a few days back promised to publish at an early date an amended report as to bromine prospects and our combine. Further, it is far from being correct that the Kaisersoda works mentioned in the article are the largest bromine producers in Germany. In fact, the Kaisersoda works do not produce an ounce of liquid bromine. Only one of the works of the Wintershall group, to which the Kaisersoda works belong, actually produce bromine, the works in question being Alexandershall, and that this factory is not the largest bromine producer in Germany is evidenced by the fact that there are several works in our combine having a higher quota than those members belonging to the Wintershall group of potash interests.

Belgian Drug Market

Brussels, June 21.

SINCE our last report business has been very unsettled owing to the rapid fluctuation of the exchange on this side. The main feature of the effect of this fluctuation is that the sellers do not keep pace with the fluctuation, but, as a rule, they anticipate the drop and increase their prices to a greater extent than is necessary.

STRAMONIUM LEAVES.—The demand is very large and the new crop is for the greater part engaged for the most principal markets. Quotations are at 45s. per cwt., c.i.f., for shipment of the new crop.

VALERIAN ROOT.—Owing to the wet weather the crop prospects are very good, and it is expected to be a "record" crop next year. This has already an effect on the prices of the small quantities in hands of the jobbers. It is possible to-day to buy at 118s. per cwt. for spot goods, but only cwt. lots are available. The new crop is offered at 80s. per cwt., with very few buyers.

CHAMOMILES.—A few speculators have started buying all the old crop available, and prices are much firmer now. However, further developments will depend on the new crop. Up till now the weather has been very unfavourable for the growth, as we have had rain all through the season. The plantings are very small and points out to a small crop and correspondingly high prices.

PEPPERMINT LEAVES.—The weather is very unfavourable for the new crop, and if we do not soon have dry and reasonable weather the outlook may prove poor. At 75s. per cwt. for August-September delivery contracts have been made, but for the time being cultivators are holding back and no important business is reported.

GENTIAN ROOT.—Prices follow closely the drop in the exchange. We are now between seasons: spot goods are eagerly wanted and high prices are obtained for these spot goods. The new crop is offered at 26s. per cwt., c.i.f.

Zanzibar Cloves

THE annual trade report of the Zanzibar Protectorate for the year ended December 31, 1925, compiled by the chief of Customs, has been issued by the Department of Overseas Trade in London, and gives full details of imports and exports. Dealing with the export of cloves and clove stems, the report states that 701,494 frasilas, or 219,217 cwt., were shipped, the value being rs. 1,32,82,782; clove stem exports amounted to 132,608 frasilas, valued at rs. 7,45,512. The corresponding figures for exports during the previous four years are as follows:—

Year	Cwt.	Cloves Value	Cwt.	Clove stems Value
		Rs.		Rs.
1921 ..	167,296	1,14,83,330	51,680	7,69,753
1922 ..	186,624	1,14,64,056	22,491	3,59,841
1923 ..	200,623	1,59,24,888	51,516	9,81,387
1924 ..	169,309	1,21,52,211	24,531	4,83,963
1925 ..	219,217	1,32,82,782	41,440	7,45,512

The average value (per cwt.) of cloves was: 1921, rs. 68.64; 1922, rs. 61.45; 1923, rs. 79.38; 1924, rs. 71.77; 1925, rs. 60.59. Of clove stems, the average value (per cwt.) was: 1921, rs. 14.89; 1922, rs. 16.00; 1923, rs. 19.05; 1924, rs. 19.72;

1925, rs. 17.99. The destinations of the clove exports during the quinquennial period 1921-25 were as follows:—

Countries	1921	1922	1923	1924	1925
	cwt.	cwt.	cwt.	cwt.	cwt.
India ..	69,083	80,224	68,194	77,333	97,906
United Kingdom ..	48,820	36,808	78,708	28,320	41,966
United States ..	32,565	37,580	32,168	34,925	49,456
Germany ..	7,218	3,605	3,800	5,752	3,157
France ..	3,491	12,456	4,936	6,372	5,054
Australia ..	780	1,761	378	1,204	696
Belgium ..	—	250	125	125	—
South Africa ..	452	608	464	558	386
Italy ..	542	2,924	1,034	3,221	1,616
Holland ..	376	751	7,875	4,709	8,729
Port. E. Africa ..	49	—	2	27	28
Aden ..	1,180	1,601	1,255	1,195	1,265
Egypt ..	851	3,112	739	2,317	1,668
China ..	1,005	1,668	630	973	584
Japan ..	696	1,240	153	305	78
Netherland E. Ind.	—	—	—	—	5,422
All others ..	188	2,036	185	1,973	1,206
Total ..	167,296	186,624	200,646	169,309	219,217

The quantity of cloves exported during the year is the highest on record with the exception of 1915, when 227,013 cwt. was reached. The exports during 1925 reflected the high level of production maintained during the last two clove harvests, and it was only to be expected that the abnormally large supplies of cloves available for shipment should result in a fall in prices. It must not be assumed, however, that the rather drastic decline in clove prices is merely the outcome of larger production. To a considerable extent (says the report) it appears to be due to the absence of speculative transactions in clove produce in overseas markets, and the comparative freedom from fluctuation in local prices during the year indicates an unusual steadiness in foreign demand. The following comparative statement of average clove prices realised at the Customs weekly auction sales illustrates the difference in character of the clove business transacted during the two years 1924 and 1925:—

Year	Pemba cloves		Zanzibar cloves	
	Average price per frasila		Average price per frasila	
	rs.		rs.	
1924 ..	23.70		22.67	
1925 ..	16.12		17.06	
Year	Range of average prices		Range of average prices	
	during the year		during the year	
	rs.		rs.	
1924 ..	16.25 to 27.69		18.87 to 29.56	
1925 ..	15.68 to 18.27		16.53 to 19.69	

Speculation has long been one of the most unsatisfactory features of the clove trade, and the tendency to sounder and safer business methods (says the report) is most welcome. Another satisfactory development is the increase in the direct shipment of cloves to America, and the institution of direct shipments to the Netherland East Indies, which have hitherto looked to Singapore and Bombay for their supplies. There is, indeed, every reason to believe that at the present time the Zanzibar clove industry is in a healthier condition than it has been for many years. Production continues to increase, export marketing is being reorganised on a more economic footing, and a great improvement in the condition of cloves sent out of the Protectorate is assured.

Exchange Rates on London

The following is a list of Continental and other exchange rates against the pound sterling on London prevailing at 4 p.m. on Wednesday:—

Place	Method of Quoting	Par of Exchange	June 16	June 23
Amsterdam ..	Fl. to £	12.107	12.11½—12.11½	12.11½—12.11½
Berlin ..	M. to £	20.43	20.44—20.45	20.44—20.45
Brussels ..	Fr. to £	25.22½	167½—167½	170½—170½
Calcutta ..	Perrup.	24d.	173½d.—173½d.	173½d.—173½d.
Constantinople ..	Pst. to £	110	905—920	905—920
Copenhagen ..	Kr. to £	18.159	18.34—18.37	18.34—18.36
Greece ..	Dr. to £	25.22½	391—394	134½—134½
Hong Kong ..	T.t. \$	—	27½d.—27½d.	27½d.—27½d.
Italy ..	Lre to £	25.22½	134½—134½	134½—134½
Kobe ..	Yen	24.58d.	23d.—23½d.	23½d.—23½d.
Lisbon ..	Escu	53½d.	2½d.—2½d.	2½d.—2½d.
Madrid ..	Pes. to £	25.22½	30.03—30.08	29.98—30.01
Montreal ..	\$ to £	4.86½	4.85½—4.86½	4.85½—4.86½
New York ..	\$ to £	4.86½	4.86½—4.86½	4.86½—4.86½
Oslo ..	Kr. to £	18.159	21.87—21.92	22.00—22.02
Paris ..	Fr. to £	25.22½	167½—167½	171—171½
Singapore ..	Per doh.	—	27½d.—27½d.	27½d.—27½d.
Sofia ..	Lev. to £	25.22½	680—690	670—680
Stockholm ..	Kr. to £	18.159	18.13—18.14	18.12—18.13
Switzerland ..	Fr. to £	25.22½	25.13½—25.14½	25.13—25.14
Vienna ..	Sh. to £	24.02	34.45—34.50	34.40—34.45
Warsaw ..	Zloty to £	25.22½	50—52	51—53



Letters for this section should be written on one side of the paper only. Correspondents may adopt an assumed name for purposes of publication, but must in all cases furnish their real name and address to the Editor.

The Vice-Presidency of the Pharmaceutical Society

SIR,—May I, through your columns, thank the numerous correspondents who have sent me their congratulations on the honour conferred on me by the Pharmaceutical Society's Council by electing me to be the Vice-President for the ensuing year? I would willingly acknowledge all the letters, but they are so many that I find it impossible to reply individually. At the same time, I deeply appreciate their kindness and all the good things they say.—Yours, etc.,

HERBERT SKINNER.

Highgate, N.6.

Regulation Mania

SIR,—Your editorial article of June 12, headed "Regulation Mania," and "Jay Mack's" letter "A Pharmaceutical Disgrace," appearing in your valuable journal of June 19, show up in concrete form not only what we are required to put up with, but what we, in common with the rest of the community, are afflicted with. All down the line we are harassed as a business nation by a multitude of all sorts of ambiguously drawn up Acts of Parliament, excellently adapted for fostering litigation, extracting savage fines and prompting snug jobs for those with influence behind the scenes. No other country in the world can boast of sixty-odd ministries putting money into one pocket and taking it out of the other in the belief that with hordes of officials engaged in the administration process such a policy is of value on balance—economic or otherwise. The country needs the services of a great man in our midst to sweep away all baubles, and to frame necessary departments on a proper supervisory basis, where the "go as you please" and "spend what you like" system is reorganised on lines of common sense.—Faithfully yours,

F. C. HERON.

Ealing, W.3.

Our Most Valuable Asset

SIR,—Mr. F. D. Chambers is correct in what he says (*C. & D.*, June 12, p. 804). Chemists would appear to wish to sacrifice their chief asset to recognition by the bulk of the community—namely, the title "chemist." Hence the Retail Pharmacists' Union, and not the Retail Chemists' Union. Mr. Chambers is, however, quite wrong when he says that the use of the word "pharmacist" is fostered by the wholesale trade. True, one house at least has the word "pharmacist" printed on their address tallies; for myself, in my small way, I have since 1908 always deprecated the use of the word, and have eliminated it from all addresses, lists, advice notes, etc., and from all correspondence with chemists all over the country.—Yours truly,

H. W. HARRIE.

Twickenham.

Managers' Salaries

SIR,—In reply to "Lancashire" (*C. & D.*, June 12, p. 804), it is a fortunate thing that managers' salaries average £7 per week (which it is my experience they do), as it, of course, limits the branches which could be considered paying propositions, and so we get more individual pharmacies. I think this is all to the good. An individual pharmacy can be quite a paying proposition where a branch would be a loss. The light that can be thrown on "Lancashire's" problem is that the required salary

for a £7 manager comes from the fact that the branch must be a "good" one—i.e., it must show more than 25 per cent. gross profit. The 25 per cent. gross profit is generally due to the persistent pushing by many chemists of branded proprietary sundries (tooth-brushes, enemas, hair brushes, etc.) showing 33½ per cent. net on returns, whereas this side of the business must show 50 per cent. on returns if a business is a "good" one. The "poor" business, I have also noticed, invariably neglects own proprietaries, and managers are often tempted to do so; I suppose it is easier, and unfortunately it is true that the average man will not give the same thought to another's business that he would to his own; and if so many proprietors fail, or do not bother, to think out why their gross profit is so low, how much less likely is a manager to do so!—Yours truly,

SUBURBAN (14/6).

SIR,—The cause of "Lancashire's" dilemma is not far to seek. In fact, it does not need seeking; it is here: it is ourselves, the chemists. We are fairly proud of our own importance and worth as qualified chemists, but we keep it to ourselves. We dare not let our customers think so, or we might possibly have to charge a little more for many services we render; instead we let them think we are just shopkeepers, like their grocer, etc., and sell for next to nothing. Now my plumber has a little more thought for himself, and, apart from materials, he charges me 3s. 10d. an hour. Here is a concrete example:—

Bis. carb.	...	...	...	...	5ij.
Mag. carb. pond.	...	...	...	...	5ij.
Pot. brom.	...	...	...	...	5ij.
Spt. chlorof.	...	...	...	...	5ij.
Aq. menth. pip.	...	...	...	ad	5viij.

The above prescription has many times been dispensed by two old-established chemists for 1s. 3d. (without container), and is being so dispensed to-day. To copy, label and dispense this, at a moderate estimate of time, would occupy fifteen minutes. Reckoned out "a la plumber":—Time, 1s.; the rest, 3d.; total, 1s. 3d. Result: We want a youth to matriculate and qualify, but we cannot pay him much (only £4 10s. or £5 when he is through). Final result: Would-be apprentice, after listening to "prospects," smiles and does not turn up.

Yours, etc.,

J. HADFIELD.

Leicester.

SIR,—The question of the absorption of qualified men seems to be arising again. During the discussion at the annual meeting of the Pharmaceutical Society Mr. Belsher asserted that some qualified men were driving motors or working in the docks, and yet he further stated that in some cases he had no replies to advertisements for assistants. There seems to be some discrepancy here; surely, if there are so many men coming into the business, there must be some of them who would sooner try for a berth in the trade they have qualified for than take up what at best are only odd jobs. On the other hand, in many trades, where there is no elaborate training necessary, wages are paid which seem out of all proportion when compared to those ruling with chemists' assistants; and it is quite possible that some of those men who have taken up motor driving, etc., have done so for this reason. In this respect the letter of "Lancashire" (*C. & D.*, June 12, p. 804) will bear examination; although £7 a week may be a reasonable salary for a qualified manager, I should imagine it to be the exception rather than the rule; £5 is a nearer figure in most cases, and this is a wage which is reached nowadays by many mechanics, council employees, and others, with much shorter hours and little responsibility. Decidedly "Lancashire" is very moderate with his expenses, particularly with regard to the rent and rates; any man who can get a turnover of £3,000 on such a rental is fortunate to-day, and, if he runs the business himself, is not so badly off, but when it comes to paying the larger part of the profits in wages there is not much in it. Even when an employer may be willing to pay the higher rate, he may not be able to do so and at the same time get an average return on his money.—Faithfully yours,

HIGHLOW (12/6).

Legal Queries

W. P. W. (19/6).—The red cross design may not be used for the purpose of a trade or business, but this does not prevent a local council employing it on their ambulance vehicles. See *C. & D. Diary*, 1926, p. 262.

J. G., Ltd. (19/6).—If a trade-mark or brand name is applied solely to a corn paint this would constitute a claim to proprietary rights, and would neutralise the effect of registering a formula of a "known, admitted and approved" remedy.

S. H. (14/6).—It is not possible at present to state whether the Vinegar Bill will prohibit the sale of vinegar essences or vinegar made from them. The Bill was subjected to several alterations in Committee, and may yet be opposed in the House of Commons when it comes on for the third reading.

F. A. (15/6).—Certified and practising midwives may be supplied, for use in their profession, on signing the register, with preparations of opium, but morphine is not included in this definition, consequently preparations of morphine are not included in the authorisation. You are correct in insisting upon a medical prescription for morphine suppositories where and when required.

F. D. (8/6).—The composition of the Foot Preparation may be an influence in deciding whether the article will be rendered liable to stamp duty by the use of the various expressions you mention. These could be employed, for example, in describing the action of a foot preparation composed, as several of these are, of sodium carbonate or natural salts, as the preparation would benefit by the pure drug or saline exemptions. Otherwise some of the phrases seem to hold out the article as a remedy for corns.

Subscribers' Symposium

For interchange of opinion among "C. & D." readers and brief notes on business and practical topics.

Meeting Competition

A. C. H. (7/6) writes: Could any of your readers kindly inform me on what is the best method of meeting competition by a Co-operative Society which pays dividends on the face value of P.A.T.A. goods?

Irregular D.D.A. Prescriptions

There seems to be some misunderstanding with regard to Dover's powder and the D.D.A. Pulv. ipec. co. is exempt, but neither the public nor the bulk of the medical men realise that any addition, such as aspirin or phenacetin, makes the prescription liable to D.D.A. formalities. Perhaps it would be as well for the pharmacist to make a point of tactfully informing the patient at the outset why the prescription must be retained. Otherwise the doctor is approached, and he may, as in a recent case, tell his patient that "It is all nonsense for the chemist to refuse to return the prescription." Then the loss of a customer is likely to result.—*Adsum* (30/4).

Faulty Test Tubes

The trouble-making test tubes mentioned by "Abel Scholar" (*C. & D.*, April 17, p. 581) are unannealed, and break owing to the presence of an intense ring-strain. This is a common occurrence in rapidly worked glass, the strain being more localised with the quickness of working. Good lamp-workers spread the strain by warming a wide band of the worked glass with a smoky flame; but the cheapness of test tubes does not permit this operation, even when juvenile or casual labour is used, as in Czechoslovakia. In this connection the writer once made by machine and re-annealed 30,000 test tubes in an apparatus used to prevent "thimble" fracture of glass containers for the minehorns used in the anti-submarine warfare. These, however, were unsaleable even at cost, owing to low foreign exchange and withdrawal of import restriction on glassware. Consequently the plant was dismantled, despite the fact that machines, burners and annealing plant were better than the Germans ever had. This illustrates one result of failure to support a British industry.—*X.* (214).

Miscellaneous Inquiries

When samples are sent particulars should be supplied to us as to their origin, what they are, what they are used for and how. We do not undertake to analyse and report upon proprietary articles nor to publish supposed formulas for them.

C. M. (28/4).—**UDDER APPLICATION.**—Our subscriber writes that "this mixture is much used locally, and is considered excellent for inflammation of cows' udders as a rubbing bottle." The preparation, which is pale green in colour, consists of two layers. The upper is composed of turpentine oil (say, 60 per cent.) and liquid paraffin (40 per cent.), and the lower layer of liquid paraffin mainly. There is also present a little camphor.

P. W. (29/4).—**PINE BATH POWDER.**—This is a strongly orange coloured powder consisting of sodium bicarbonate coloured with fluorescein and perfumed with a pine oil and probably some menthol.

E. M. M. (30/4).—**POWDER FOR LUMBAGO AND RHEUMATISM.**—This sample was examined and found to be a pure white powder, composed entirely or mainly of aspirin and acetanilide.

C. W. C. (25/5).—**PREPARATION FOR TREATING SILK STOCKINGS.**—This preparation is used by dissolving in water and in this solution soaking new stockings for preventing "ladders" in the stockings. The stockings are dried and afterwards washed in the usual way. Our opinion was asked as to whether the stockings after this treatment would be harmful to the skin. Too little of the sample was sent for proper analysis, but our examination shows that the powder contains about 30 per cent. of potassium hydrogen sulphate with citric acid, probably 70 per cent. Properly used, there appears to be nothing to cause harm to the skin. If the solution were used too strong it might cause irritation, and would probably spoil the stockings.

M. M. & Co. (26/5).—(1) **VANILLA ESSENCE** :—

Fine vanilla (cut small) ...	3j.
Isopropyl alcohol ...	3xxvj.

Macerate for a month and filter.

(2) **VANILLIN ESSENCE (W. Forster's Formula)** :—

Vanillin ...	3vj.
Rectified spirit or ...	3x.
Isopropyl alcohol ...	3xxvj.
Distilled water ...	3xxxvj.

Colour with caramel colour B (Williams Brothers), gr. viij.

(3) Powder forms of vanilla flavouring are obtained by triturating a concentrated vanilla essence with sugar.

E. W. (29/5).—**WART CRYSTAL.**—This consists of ammonium chloride only.

G. M. (31/5).—We should like to have a statement of your experience or of the difficulties you have encountered in dispensing the prescription of which you send a copy.

W. R. (1/6).—**FININGS FOR BEER.**—To 7 lb. of isinglass, covered with water, add 1 lb. of tartaric acid, dissolved in warm water, and 1 gallon of sulphurous acid. Add fresh water as the isinglass swells. Rub through coarse and fine sieves, with intervals between the rubbings. Make up to 72 gallons.

E. A. O. (2/6).—**SEWAGE DEODORANT.**—Chlorinated lime and carbolic acid are the two cheapest deodorants for sewage. It seems, however, as if the sewage disposal method adopted at the isolated house is at fault and should be improved.

W. G. R. (3/6).—(1) **SYRUP OF FIGS.**—Chop up 2 oz. of figs and boil in a pint of water until nearly half the water is evaporated. Strain off 10 oz. of the decoction and in it dissolve sugar 1 lb. (2) **VANISHING CREAM.**—See p. 49 "C. & D. Price List Formulary" (Office of C. & D., 2s. 6d.).

Serum (3/6).—Borax cannot be made permanently to keep as a loose powder without an addition, such as boric acid, and this may not suit the purpose you have in view.

J. H. C. (3/6).—(1) NAIL VARNISH.—Celluloid varnish tinted with rosaniline. (2) CUTICLE REMOVER:—

Caustic potash	...	...	...	3ij.
Glycerin	...	...	...	3iiss.
Oil of bergamot	...	...	...	xxv.
Water	...	...	...	3x.

The bottles should have rubber stoppers.

F. W. (4/6).—The production of a red liquid "of the consistence of blood" could be managed by a solution of ammonium sulphocyanide in one solution and an iron salt in the second liquid. The proper consistence could be obtained by adding white of eggs or mucilage.

Toffee (4/6).—IODISED TOFFEE.—Only a trace of sodium iodide is needed to make iodised toffee. In the case of iodised salt the proportion is a grain in 20 to 25 lb. (see *C. & D. Diary*, 1926, p. 276).

R. I. J. (4/6).—MEDICAL WORK.—The book you mention was published over twenty years ago, and should be obtainable second-hand at a cheap rate. A modern work is "The Home Doctor," recently completed by the Amalgamated Press, Ltd.

B. H. & Co. (7/6).—Walter's "Manual for the Essence Industry" (Chapman & Hall, Ltd., 24s.) will suit your requirements.

G. V. T. (7/6).—COLOURING CANARIES' PLUMAGE.—For deepening the colour of canaries it is usual to add a proportion of tasteless capsicum, turmeric and egg-yolk. The following is a useful combination:—

Tasteless capsicum	...	...	...	3ij.
Turmeric	...	...	...	3iiss.
Peroxide of iron	...	...	...	3ss.
Sugar	...	...	...	3iv.

Mix.

It is possible that the addition in small quantities of a harmless red dye, such as amaranth or erythrosine, would have the same effect, but we cannot find that this has been tried and proved to be the case.

H. M. & S. (7/6).—The price of 1s. 6d. for dispensing the powder is too low. The charge on the *C. & D.* Costing System should be 1s. 9d. per oz., plus 6d. dispensing fee, making 2s. 3d. in all.

J. M. W. L. (7/6).—LECTURE ON ALCOHOL.—There is a suggestive chapter on the romance of alcohol in Martin's "Modern Chemistry and its Wonders" (Sampson Low, 7s. 6d.), which would supply material for a popular lecture on the subject. We fear, however, that the point of view is not that which your audience would expect you to take.

A. H. C. (8/6).—Theobroma oil is made odourless by heating it in the melted condition until fumes begin to be given off.

R. E. D. (8/6).—TRUSS FITTING.—We published a practical article on truss-fitting in the *C. & D.*, January 31, 1903, p. 147, and there is a chapter in "Diseases and Remedies" (*C. & D.* Office, 5s.), which gives the details required. Other books are Wood's "Application of Trusses to Hernia" (Matthews Bros., 10 New Oxford Street, London, W.C., 1s.), and Eccles's "Hernia": Its Etiology, Symptoms and Treatment" (Bailliere, 7s. 6d.).

F. & J. (8/6).—IODISED SALT.—See *C. & D. Diary*, 1926, p. 276.

B. & S. (9/6).—EMULSION OF PEPPERMINT.—As a non-spirituous substitute for essence of peppermint the following is used:—

Oil of peppermint	...	...	...	3i.
Tincture of quillaia	...	...	...	3ss.
Distilled water	...	...	...	to 3x.

Mix the oil and tincture and add the water gradually, shaking between each addition.

H. S. S. (9/6).—WATERPROOFING FABRIC.—See *C. & D.*, January 30, p. 172.

J. M. W. (9/6).—We are unable to advise you in the matter you mention, as you seem to have employed the usual remedies.

G. P. (10/6).—(1) DEVONSHIRE OILS.—The following is from "Veterinary Counter Practice":—

Spirit of turpentine	...	...	...	3x.
Camphor	...	...	...	3ss.

Dissolve and add:

Solution of ammonia	...	...	...	3j.
Tincture of opium	...	...	...	3ss.

Put the product into a wine bottle and fill up with the following:—

Soft soap	...	...	...	lb. j.
Boiling water	...	...	...	Cj.
Armenian bole	...	...	...	3iss.

Mix. Label, "Shake the bottle."

(2) ARTIFICIAL TEETH CLEANSING LIQUID.—A stabilised chlorinated solution, such as Eusol, is much used. This is made as follows:—

Fresh bleaching powder	...	...	...	12.5 gm.
Tap water	...	...	...	1,000 c.c.

Make into a paste with a little of the water and dilute with the remainder. Then add

Boric acid	12.5 gm.
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and shake well. Allow to stand for two or three hours and filter through cloth or paper.

A. P. (10/6).—The sale of sulphuric acid cannot be conducted through the post, as corrosive acids may not be sent through the post. Apart from that the use of the acid as an invisible ink is unnecessary in view of the many much more efficient processes available.

G. C. M. (11/6).—The price of the prescription you send on the *C. & D.* Costing System is 4s. 10d.

Celeritas (12/6).—SETTING LOTION FOR THE HAIR.—See *C. & D.*, March 20, p. 428.

J. G. (12/6).—The mixture, the formula for which you send, does not contain sufficient preservative to prevent fermentation. The use of chloroform water in place of plain water would probably prevent the trouble you complain of.

D. F. (15/6).—CUCUMBER JUICE.—The spirit employed in preparing cucumber juice performs the double duty of preservation and the precipitation of pectin. The quantity could be reduced to one of spirit to three of juice, and, in place of ethyl alcohol, isopropyl alcohol can be employed. This is cheaper than duty-paid alcohol and as effectual.

E. H. J. (16/6).—MILDEW ON LINEN is usually readily removed by soaking in solution of chlorinated lime.

D. S. & Co. (16/6).—BOOKS ON THE MANUFACTURE OF TOILET PREPARATIONS.—Poucher's "Perfumes, Cosmetics and Soaps" (Chapman & Hall, vol. II, 21s.); Durville's "Preparation of Perfumes and Cosmetics" (Scott, Greenwood & Son, 21s.).

Retrospect of Fifty Years Ago

Reprinted from
"The Chemist and Druggist," June 15, 1876

Trade Report

The favourable turn which recent political events have given to the financial markets may, if it prove permanent, communicate itself shortly to other departments of enterprise, and there is reason to believe that the recovery, when it once begins in good earnest, will be rapid and considerable. There is an enormous amount of dead capital, both in this country and France, awaiting employment. As soon as the nations of Europe feel the incubus of an impending war lifted from them, there will be abundant openings for enterprise, and every movement made will awaken others, so that activity would spread through the whole mass like a ferment. But this will not occur unless the intentions of the great nations are really peaceful. Admirers of the present Government have very largely discounted its claim to glory, even supposing the recent crisis has been as serious as the wildest alarmists imagined. If it should prove that its conduct has been only the result of an undignified scare, there will be no escape from the conclusion that England, above all other countries, is responsible for the gloom and depression that has lately pervaded all sections of the commercial community.



[Commenced C. & D., July 5, 1924]

France.—The practice of pharmacy in France is largely based on the provisions of the law of Germinal 21 of the year XI (April 11, 1803), subsequently amended and supplemented by various enactments. To establish or acquire a pharmacy, it is necessary to be a French citizen, at least 25 years of age, and holder of the diploma. The law of April 19, 1893, which abolished the diploma of pharmacist of the second class, stipulates that pharmacists who hold a foreign qualification may practise pharmacy in France only after passing an examination and obtaining the French diploma, and provided that a Frenchman in possession of the diploma issued by the competent authority of the applicant's country is permitted, on the basis of reciprocity, to exercise the profession in that country. There are about 11,000 pharmacies in France, for a population of 39,209,666. Pharmacists are forbidden to supply medicinal preparations or compound drugs except upon a prescription; the sale of secret remedies is prohibited. Only drugs and medicinal preparations may be sold in pharmacies, and any other form of business is prohibited. Herbalists, who are required to pass an examination, are permitted to sell fresh as well as dried non-toxic indigenous medicinal plants. No pharmacist may own more than one pharmacy; on the death of the owner the business may be placed in charge of a manager on behalf of the widow or heirs for a period of one year. Entrants into the profession are required to possess the matriculation certificate; on completing a term of one year's practical instruction in a pharmacy authorised to take apprentices an examination has to be passed before entering upon a four years' course of study at a Faculty of Pharmacy in one of the Universities. During this period the candidate has to sit for five examinations before presenting himself for the final qualifying examination for the diploma of pharmacist in the following subjects: chemistry and analysis of foods; analysis of chemical and galenical preparations; toxicology; pharmaceutical chemistry; biological chemistry; hygiene; bacteriology; materia medica, and pharmaceutical legislation. The degree of Doctor of Pharmacy is conferred on qualified pharmacists who undergo a further course of study and submit a thesis. Medical practitioners residing in places in which there is no pharmacy open to the public may supply medicines to their own patients, but are not permitted to keep an open shop. In the case of medicinal preparations issued in a form ready for sale to the public (including proprietary medicines) containing one or more substances included in table A attached to the law on poisons of 1916, the total amount, written out in full, of each of these substances contained in 100 grams of the preparation must be stated on the label. Preparations containing any of the substances enumerated in table C, destined for external use, for administration in the form of injections, or for animals, must be provided with a green label bearing the word "Dangereux," followed by "Pour usage externe," "Solution pour injections," or "Médicament vétérinaire," whichever may be applicable. When substances included in table C are delivered *per se* for internal use the green label must bear the words "A employer avec précaution." In the case of hair lotions and dyes, cosmetics and toilet preparations containing substances included in table C the names of each of these substances must appear on the label, in addition they must show a green label with the word "Dangereux." In 1916 a law was introduced imposing a revenue stamp on pharmaceutical specialties of which the complete formula is not disclosed on the label, a measure which implied official recognition and sanction of a class of preparations the very existence of which is juridically

illegal, since it is in conflict with the above cited provision contained in article 32 of the law of 1803. By the law of April 4, 1926, the definition of pharmaceutical specialties liable to this tax was modified to include all products advertised by the manufacturer or vendor to the general public by means of placards, advertisements, circulars, or prospectuses. In the instructions issued by the Direction Générale des Contributions Indirectes, a pharmaceutical speciality is liable to duty: (1) if it is held out as possessing curative or prophylactic properties, even if these are only mentioned on the labels affixed to the container or package; and (2) when the manufacturer or vendor recommends its use by means of a publicity intended to bring it to the knowledge of everybody, by means of placards, luminous signs, etc., in places accessible to the general public, advertisements in newspapers, reviews, etc., circulars, prospectuses, catalogues, price lists sent by post or distributed in the streets, placards borne by "hommes sandwich," blotting pads placed at the disposal of the public in post offices, banks, railway stations, etc. All products, even those which are not essentially pharmaceutical, are liable to duty, if they are advertised as possessing curative or prophylactic properties. Prospectuses describing only the different pharmaceutical forms in which the preparation is supplied, as well as advertisements, circulars, etc., intended solely for medical practitioners and pharmacists, do not render a speciality liable to duty. On the other hand, pharmaceutical specialties prepared by individual pharmacists for sale over the counter to their own customers, and not marketed wholesale, are not liable to stamp duty, provided the ingredients are disclosed in general terms. Up to 1923 the importation of compounded medicines into France was forbidden, but in that year No. 316 of the Customs tariff was amended as follows:—

Tariff No.	Designation of Goods	Basis of Duty	General Tariff	Minimum Tariff
316	Compound medicines not specifically mentioned (1):			
	1. Included in an official pharmacopœia	Value	60	15
	2. Not included in an official pharmacopœia, but bearing in distinct characters, in French, on the container itself and on the outer package the names and amounts of the active substances present (using customary designations and excluding chemical names and formulas), also the name and address of the manufacturer (2)	Value	60	15
	3. Not included in a pharmacopœia, and not bearing the above-mentioned declarations	Prohibited		

(1) Excluding serums, vaccines, viruses, toxins, and similar products.
(2) Medicaments coming within this description originating from countries which do not grant equivalent advantages to the importation of French medicines, are not admitted into France.

The important concession embodied in the new law resides in the fact that the designation "compounded medicines" refers not only to pharmaceutical specialties and proprietary medicines, but embraces all non-official and non-proprietary forms of drugs or chemicals, such as tablets, pills, solutions, ointments, suppositories, etc., containing either a single therapeutic agent, or prepared according to well-known formulas, but which are not included in a pharmacopœia. In 1924 the French Government issued an official notification permitting the admission into France of pharmaceutical preparations manufactured in Great Britain, provided they comply with the foregoing provisions. See also Codex.

Freehold.—An expression used to describe tenure of land for an indefinite period, as distinguished from tenure for a fixed term of years, which is known as leasehold (q.v.). The term freehold is also applied to the land itself and the buildings upon it. Estates of freehold interest may be in fee simple, in fee tail or for life. There was, prior to January 1, 1926, a third form of tenure called copyhold (q.v.).

Freezing Powders.—See Cold, to Produce.

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Freight means the sum payable to the shipowner or his agent for the conveyance of the goods from the port of shipment to the port of destination. Freight is payable in a variety of ways; it may be per lb., per package, per ton weight, per ton measurement. When freight is paid by measurement, a ton by steamer is generally forty cubic feet. To ascertain the cubic contents of a package the extreme outside measurements are taken and are then multiplied together—in feet, inches and twelfths of inches. In addition to the freight there is generally a charge of 10 per cent. for "primage"; thus freight is generally said to be at, say, 27s. 6d. and 10 per cent. primage.

French Chalk, or talc, is one of the harder varieties of steatite or soap-stone. It consists of a native hydrated magnesium silicate (s.g. 2.2 to 2.8), corresponding to the formula $Mg_3H_2(SiO_3)_4$. It is familiar in the form of small thin slabs which are used by tailors for marking cloth. The chief use of French chalk is in very fine powder as a skin lubricant. When perfumed it comprises the talcum powder used in the toilet of infants. It is a favourite ingredient in dusting powders generally. The finest and whitest kinds of French chalk are of Italian origin. Large quantities of the greyer technical varieties of French chalk are used as a lubricant in the rubber industry to prevent stickiness in tires, etc. For pharmaceutical purposes, such as pill and tablet manufacture, talc is freed from all soluble impurities (iron, etc.) by digestion with dilute boiling hydrochloric acid, and subsequent washing.

French Polish: Sale.—In 1915 the Board of Customs and Excise ruled, in reply to a letter from the Editor of THE CHEMIST AND DRUGGIST, that retail chemists could sell, *inter alia*, french polish and varnishes made with mineralised methylated spirit without holding a methylated-spirit retailer's licence (*C. & D.*, 1915, I, 557). Formulas for french polish (a name the earliest quotation for which in the Oxford English Dictionary dates from 1819) are given in "Pharmaceutical Formulas."

Friendly Societies.—There are many kinds of friendly societies, but all have for their object the relief and maintenance of the members or their families in sickness or old age; provision for widows and orphans of members; the endowment of members at a certain age; or similar benefits. Some societies combine the functions of a savings bank. The funds are provided by subscriptions made voluntarily by the members. A friendly society has no legal status, for most purposes, until it has been registered under the Friendly Societies Act, 1896, and its rules have been approved by the Central Office for the Registration of Friendly Societies. The property of a society is vested in trustees, who are authorised to take and defend legal proceedings on its behalf. The maximum amount which a member may receive from membership of one or more societies is £300 by way of a gross sum and £52 a year by way of an annuity.

Frost, Imitation.—For giving a wintry appearance to a window display, and for introducing a seasonable atmosphere at Christmas time, there is nothing more effective than artificial frost, which, used in conjunction with cotton-wool, white confetti, and mica snow, gives the necessary finish to a display of Christmas presents, such as manicure or toilet sets, hair brushes, perfumery, and so on, or provides an eminently suitable setting for the exhibition of household supplies in the way of wintry needs, such as hot-water bottles, cough cures, invalid foods, and other seasonable lines. A common method of producing a temporary frosted effect on the plate-glass window is by using a concentrated solution of Epsom salts. This should be smeared over the glass. If desired, a small proportion of gum may be added to the Epsom salts. In either case the mixture should not be applied too heavily, and ought never to be left on the glass sufficiently long to become discoloured or patchy. A few sheets of glass treated in this way make excellent backgrounds for window

displays, especially if supplementary display-aids, in the shape of artificial or real branches, covered with imitation snow or frost, are introduced. Care should be taken, in treating the window in this way, not to place the "frost" in any position on the glass where it is likely to interfere with potential customers' inspection of the goods displayed in the window. An effective treatment is to make a rough border all round the inside edges of the window, or of each sheet of plate-glass, and to taper the display back towards the centre of the window enclosure. The "frost" should not be applied in an ornamental or purely regular manner.

Fructose is a synonym for *lævulose* (q.v.), which is also called fruit sugar and diabetin, the last name indicating its supposed advantages in diabetes over glucose and cane-sugar. Modern research shows that fructose is utilised in metabolism and reacts therein with insulin, only a little more slowly than dextrose. Accordingly fructose is also detrimental to diabetics, inasmuch as it becomes transformed into blood sugar, which produces diabetic coma.

Fruit Trees: Washes.—Numerous formulas for washes used in spraying fruit trees, with hints for use, are given in "Pharmaceutical Formulas," and a selection was also published in *The Chemist and Druggist Diary*, 1910. The scientific knowledge of pharmacists may be turned to account in catering for this trade, especially if it is backed with practical acquaintance with the distinctions in use between the various washes. The following Board of Agriculture leaflets deal with the preparation and the effects of specific formulas: Nos. 4, 15, 16, 20, 23, 30, 34, 41, 47, 62, 69, 70, 104, 120, 131, 161, 195.

Fuller's Earth is a clay-like substance which has long been used by fullers for cleaning woollen goods owing to its property of absorbing oils, hence its name. English fuller's earth from deposits in Surrey has long had the highest reputation, the output being some 15,000 tons per annum, valued at the pit from 15s. to £2 per ton, according to colour and quality. The American production, mainly in Florida, is about double this amount. The colour of fuller's earth is variable, being yellow in surface layers, where its content of iron is more oxidised, whilst deeper deposits are of a decidedly bluish tint. Yellow fuller's earth contains about 30 per cent. of water, the dried material having the following approximate composition: SiO_2 , 59 per cent.; Al_2O_3 , 12 per cent.; Fe_2O_3 , 6.25 per cent.; CaO , 6 per cent.; MgO , 2 per cent.; combined water, 13 per cent. The chief use of fuller's earth is in the clarification and decolorisation of vegetable and mineral oils, the earth being valued for its adsorbent properties, on which its relative "bleaching" properties depend. Other technical uses are in the wall-paper industry (as a pigment) and textile industry (for cleaning). A relatively small quantity is used for infants' toilet purposes, this consisting of finely ground or impalpable yellow powder as free from grit as possible. See Kaolin and China Clay.

Fulminating Mercury, or mercuric fulminate $Hg(CNO)_2$, is a detonating compound used in the manufacture of percussion caps for exploding nitroglycerin (dynamite), nitrocellulose (cordite) and high explosives generally. It is made from mercury and nitric acid, with the addition of alcohol to restrain the violence of the reaction. Mercury fulminate is made in comparatively small batches in isolated sheds and under conditions which prevent contact with metals owing to danger from sparking. Mercury fulminate (s.g. 4.42), which is white or light-grey in colour, can be handled without danger when moist. It is ordinarily stored in linen bags under water. The wet fulminate may be air dried below 45° C. by spreading on linen or paper supported on stringed wooden frames. The utility of mercury fulminate is the violence with which it explodes when forcibly struck. Many types of combustibles are mixed with mercury fulminate to form igniting or detonating compositions for use in percussion caps, barium nitrate, potassium chlorate, antimony sulphide and sulphur being

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the chief ingredients used to delay the too rapid action of fulminating mercury alone.

Fulminating Silver Ag(CNO) is a detonating compound even more dangerous than mercury fulminate. It is licensed for use in toy crackers. Silver fulminate decomposes explosively at 100° C., and is not safe even when wet.

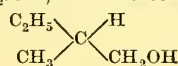
Fumigation (Horticultural): Danger.—Customers who buy any of the recognised horticultural fumigants should be warned of the risk of incautious handling, particularly if hydrocyanic acid or carbon bisulphide is employed. Hints for the manipulation of carbon bisulphide are given in Board of Agriculture Leaflet No. 206, and hydrocyanic acid is similarly dealt with in Leaflet No. 188. The whole subject is comprehensively treated in *The Chemist and Druggist Diary*, 1910, p. 217, and the most modern methods of using calcium cyanide and liquid hydrocyanic acid are indicated in the *C. & D.*, I, 1926, p. 446. In the case of hydrocyanic acid, whether it is generated by means of a cyanide in the presence of an acid or is released from a cylinder of the liquefied acid, the utmost care should be taken to withdraw so soon as the operation has been started, and to close the greenhouse or other enclosure securely; the process, indeed, may preferably be set going by a cord-and-pulley arrangement from outside. Equal caution should be used in re-entering the atmosphere in which the gas has been released, fresh air being allowed to circulate freely in the space in question for some time before the operator approaches it very closely. Carbon bisulphide yields a vapour that is explosive as well as toxic. Formaldehyde and sulphur, when vaporised, disclose their presence by pungent odours.

Furfural, $\text{H}-\text{C}=\text{C}-\text{H}$, is a ring compound which

$$\begin{array}{c} \text{H}-\text{C}=\text{C}-\text{H} \\ | \quad \quad | \\ \text{H}-\text{C} \quad \quad \text{C}-\text{H} \\ | \quad \quad | \\ \text{O} \quad \quad \text{O} \end{array}$$

has the character of an aromatic aldehyde. It is formed when wood, straw, seed-coats or similar cellulosic waste containing pentosones are distilled with dilute hydrochloric or sulphuric acid. It is now made on a large scale in the United States from corn-cobs or oat hulls, these being placed in a still, covered with dilute acid, and the vapours distilled through a continuous fractionating column. The product (of 95 per cent. purity) is converted by heating to 160° C. into a technical grade furfural (98 to 99 per cent., s.g. 1.159-1.160 at 20° C.). Furfural is almost water-white in appearance, but it discolours on keeping, and should be re-distilled under reduced pressure if required pure. Furfural has been used industrially in recent years on a large scale for the manufacture of synthetic resins or rubber substitutes, particularly moulding compositions for gramophone records and insulators. These consist chiefly of furfural-phenol condensation products. Furfural possesses a wide range of solvent action, being particularly useful for dissolving cellulose esters, and various patents cover its application to the preparation of lacquers and aeroplane dopes. Furfural has a double action, with furfural-phenol resins acting both as a solvent and a hardening agent, so that it has great advantages in the preparation of cold moulding compounds and impregnating varnishes. Furfural, which has also been used for preserving biological specimens, has a phenol coefficient of 0.26. Other recent applications of furfural are as a vulcanisation accelerator in the rubber industries and for the manufacture of new dyes.

Fusel Oil is a variable commercial product obtained during the rectification of the impure alcohols known as potato spirit, grain spirit, etc. It consists chiefly of the two amyl alcohols, viz., *iso*-amyl alcohol ((CH₃)₂CH.CH₂CH₂.OH) and secondary butyl carbinol-



The levogyrate rotation of commercial fusel oil is due to the asymmetric carbon atom in this latter alcohol, which is accordingly also called active amyl alcohol. Ethyl, propyl and butyl alcohols are also normal constituents of fusel oils. Inactive *iso*-amyl alcohol is the predominant constituent (about 70 per cent.) of fusel oil from grain or potato spirit, whilst that from beet contains an appreciable amount of *iso*-butyl alcohol. Fusel oil is employed chiefly in the manufacture of flavouring essences (amyl acetate and amyl butyrate) or as a solvent in aeroplane dopes. Amyl alcohol for analysis is obtained by rectification of fusel oil. Synthetic amyl alcohol or fusel oil is now made in the United States by chlorinating natural hydrocarbon gases. The fractionated pentyl chlorides are converted into crude amyl acetate by heating with sodium acetate under pressure to 200° C.

Fustic is a dyestuff chiefly used for colouring wool of an orange yellow colour. It is the wood of *Morus tinctoria*, Linn., sometimes known as *Machura tinctoria*, D. Don, but now named *Chlorophora tinctoria*, Gaudech (N.O. *Urticaceae*). The tea is indigenous in Mexico, and some of the West Indies. The wood is imported in logs of various sizes. It should be dense, of a fine orange colour, and not worm eaten. That of Cuba fetches the highest price, and that from Mexico, Honduras, Jamaica and St. Domingo being less in value. This kind of fustic is known as old fustic or Cuba fustic. Young fustic is a different product, obtained from *Rhus Cotinus*, Linn. (N.O. *Anacardiaceae*). It is known also as Venetian or Hungarian sumach, and is used in the Tyrol for tanning leather. The extract of fustic is imported as well as the wood, and to distinguish it from the extract of quercitrin bark (*Quercus discolor*, Ait.) a little of the dry extract is dissolved in concentrated sulphuric acid and carefully diluted with cold water. The fustic extract retains its yellow colouring matter, but that of quercitrin is decolorised completely.

Futures is a commercial term used to describe the dealings in a commodity for future (or forward) delivery or shipment. To deal in "futures" is to speculate in produce in the hope that a change in the market value, before the specified time of settlement or delivery, may bring profit to the operator. In former years general produce was chiefly brought to England on consignment, and forward contracts were only entered into by merchants who desired to extend the date of shipment. At the present time the former practices have been reversed, and the quantity of produce sent over on consignment by shippers is of little importance, whilst fully 90 per cent. of the produce imported is represented by forward contracts. Future dealings exist in all the principal articles sold on Mincing Lane, such as drugs, spices, sugar, shellac, rubber, oils, coffee, cocoa, cotton etc., and, although there is a certain amount of legitimate trade, most of the "future" transactions represent "paper" or speculative dealings only. As an illustration, one shipment of ten tons very often satisfies as many as 200 contracts of the same quantity, which means that, although 2,000 "paper" tons are dealt with by various dealers, only actually ten tons is shipped from the primary source. From these "future" transactions spring the terms "bull" and "bear," and "long" or "short." A "bull" is a speculator who has bought a commodity and is holding for a rise in value, and a "bear" is a speculator who has sold a commodity for forward delivery at a certain price without possessing same, and hopes to buy it back at a lower price before its arrival. As a rule, most of these future transactions are done through a Settlement or Clearing House, at which prices are fixed at regular intervals, and where settlements have to be made by either buyer or seller, according to the price fluctuation of the market. These settlements are in vogue in order to minimise losses on articles which fluctuate very rapidly, so that the dealer as well as the broker is protected against each other in the event of financial difficulty.

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Galangal.—Although this spice used to be imported with other similar condiments, such as ginger, pepper, cloves, nutmegs, cardamoms, and zedoary, from the Far East, and has been known in Europe for at least a thousand years, it is but little known in this country, although still a popular remedy and spice in Latvia, Esthonia, and Central Russia for flavouring liqueurs, and taken by the Tartars with tea, and used in cattle medicine. Its botanical source was unknown until 1870, when Dr. H. F. Hance sent specimens and a description of the plant, collected in the island of Hainan, to the Linnean Society ("Jour. Linn. Soc. Bot.," 1871, p. 20). The plant was named *Alpinia officinarum*, Hance (N.O. Zingiberaceae). Practically the whole of the galangal produced in China is shipped to Hong Kong and Singapore for transshipment. The rhizome is of a dark reddish-brown colour, in pieces about $1\frac{1}{2}$ to 3 in. long and up to $\frac{3}{4}$ in. in diameter, often branched and marked with raised sinuous rings at short intervals which mark the former attachment of leaf bases. It is hard, tough and shrivelled, with a darker central column. It has an agreeable aroma and a strongly pungent spicy taste. The odour and taste is due to an essential oil present to the extent of 0.7 per cent. This consists of cineol, methyl cinnamate, and an oily pungent body, galangol. It also contains three yellow crystalline bodies, but these are tasteless. The name galanga appears to be derived from the Arabic khulangan, which in turn is derived from the Chinese name Kau-liang kiang, meaning Kau-liang ginger, Kau-liang being the ancient name of a district in the province of Kwantung. Galangal is sometimes called Lesser Galangal, in contradistinction to the Greater Galangal, the rhizome of *Alpinia Galanga*, Willd., sometimes imported from Java. It is readily distinguished by its larger size and the pale buff tint of the transverse section. Good illustrations of both rhizomes are given in Planchon, "Drogues Simples," tem. 1 (pp. 225-227, fig. 195-198). It is a favourite stomachic with Chelsea pensioners. In the island of Hainan galangal is cultivated extensively; in fact, seven-eighths of the galangal produced in China comes from Hainan. Cultivation of the root is also carried on at Kaochow and other parts of the province of Kwangtung, and in the vicinity of Pakhoi. The volume of trade, however, is only about 35,000 Haikwan taels per annum. Usually galangal is packed in native bales covered in gunny, weighing about $1\frac{1}{2}$ cwt.

Galbanum.—Although this drug has been known from the time of Moses (Ex. xxx, 34), who mentions it under the name of "Chelbenah," as an ingredient in the sacred incense, its botanical source has never been accurately determined. There is little doubt, however, that it is a product collected in Persia. One plant, at all events, probably yields one of the varieties of the galbanum of commerce, and that is *Ferula galbaniflua*, Boiss. and Buhse. Its variety *Aucheri*, so far as the fruits are concerned, possesses even more distinctly the taste of Levant galbanum in the tears than the typical species; but which variety of the drug is derived from it is still uncertain. The Levant galbanum of commerce is known in Persia as Khasnih, or, in the Mazanderan dialect, as Boridsheh. Another plant which is said to yield galbanum, *F. rubricaulis*, Boiss. certainly does not yield it, since authentic specimens, as in the National Herbarium at South Kensington, have a distinct taste of asafetida. A plant that was brought home by the late Dr. T. E. Aitchison from Afghanistan, as that of galbanum, bears a close resemblance to *F. galbaniflua* in the leaves, but has a hollow stem, which in *F. galbaniflua* is solid, and the gum resin obtained from it was different from galbanum, both in taste and odour, which was stated, when fresh, to resemble that of celery. In commerce, galbanum is distinguished as Levant

and Persian galbanum. The former exists in two forms: (a) in the tear, and (b) in lump or mass. The tears are yellowish-brown and dull internally (not with a vitreous lustre, as in ammoniacum), and have a not unpleasant, slightly musky odour. This kind often comes mixed with the fruits of the plant, but no one has yet succeeded in germinating them. The fact of their presence indicates, however, that, like ammoniacum in the tear, this form of the drug is evidently obtained from the fruiting stem. Levant galbanum in lump is usually formed by an aggregation of tears stuck together, but these also contain fragments of stem and fruit stalks. There is, however, another form of the drug, containing yellowish fragments, but mixed with soft pieces of larger size of a bluish or greenish colour, evidently derived from the root, sections of which usually form a characteristic feature of it. The odour of this galbanum is not so pleasant as that of the Levant tear galbanum, but more terebinthinous. Whether it is derived from a different species is still unknown. A third variety of galbanum is occasionally exported to this country from Bombay, known as Persian galbanum, a thick, brownish liquid of the consistence of Venice turpentine, containing fragments of stems and fruit stalks. This is known in Bombay as Jawashir, or Gaoshir, or Djawshir. The odour resembles that of turpentine, otherwise it is like that of Levant galbanum. The chemical tests given by Hirschsohn seem to indicate that possibly the so-called "Levant" galbanum, containing slices of the root, may be derived from a distinct species, and that Persian galbanum is almost certainly so. Some galbanum reaches Russia by way of Astrakan and Orenberg, and this may possibly be derived from *F. Schair*, Borszczow, which grows on the confines of Siberia and Turkestan. Borszczow states that the milky juice exuded from the stem had completely the odour of galbanum, and the scent was so strong as to be observed at a considerable distance; but as this plant does not appear to exist in either of the National Herbaria in London, it is impossible at present to verify the statement as to the taste or odour of this species. There can be little doubt that the Levant galbanum in the tear would be the kind used in the sacred incense by Moses, as its musky odour is far more pleasant than that of the other varieties. Galbanum contains about seven per cent. of essential oil, 60 per cent. of resin, and some mucilage, also, 0.7 per cent. of umbelliferone. If a small fragment of galbanum is immersed in water and a drop of liquid ammonia added a brilliant blue fluorescence appears, which is destroyed by an acid.

Galenicals.—The Oxford English Dictionary defines "galenical" as "a remedy such as Galen prescribed, a vegetable medicine, a simple." The late Professor Redwood, in a course of lectures delivered in 1886, gave the following explanation:—

The term galenic or galenical was employed to designate products of the art of pharmacy as applied to natural substances for the purpose of adapting them for medical use, while they still remained mere mixtures of more or less active as well as inactive constituents. Principally but not exclusively derived from the vegetable kingdom, their distinguishing feature consisted in their being mere mixtures of ingredients which could not be chemically defined.

The word "galenical" implies, on account of its historical associations, a separation from and contrast to medicines of purely chemical origin, even if in practice the distinction is apt to become blurred. Attfield's "Chemistry" (eighteenth edition) mentions the following classes under the heading "The Galenical Preparations of the British Pharmacopœia": Cerates, confections, decoctions, enemas, extracts, glycerins, infusions, juices, liniments, lozenges, mixtures, ointments, pills, plasters, poultices, powders, spirits, suppositories, syrups, tinctures, wines.

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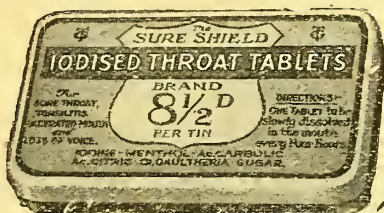
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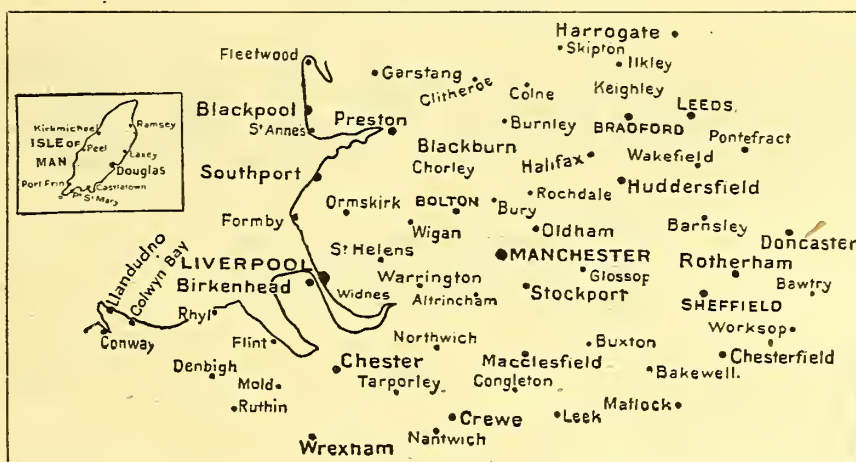
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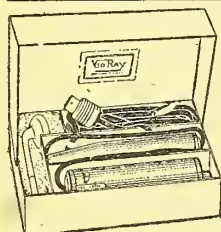
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For Blood Poisoning and Inflammation.
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During the coming four months, an insistent advertising campaign will make these unique qualities of "Specifene" known through the length and breadth of the land. There is certain to be a lively demand.

"SPECIFENE" is sold at
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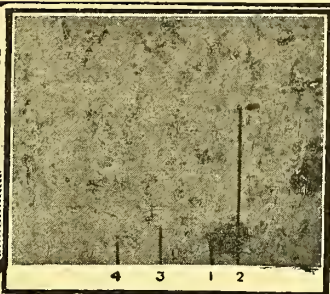
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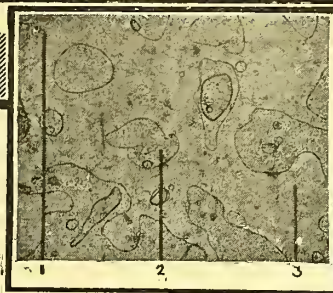
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Micro-photograph of stool after Petrolagar administration, showing complete emulsification and thorough admixture with intestinal content.

(1) Epithelial Cells (2) Microscopic Oil Globule (3) Agar-Agar Granule (4) Faeces



Micro-photograph of faeces after administration of plain mineral oil, showing complete absence of emulsification; this explains why mineral oil always leaks.

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Petrolagar

(trade mark)

(DESHELL)

FOR CONSTIPATION.

THE micro-photographs clearly demonstrate the superiority of Petrolagar over ordinary liquid paraffin in the treatment of constipation. On the left the perfect admixture with the intestinal content obtained with Petrolagar is apparent; the other photograph, in which large unemulsified globules of oil are present, explains at a glance why plain mineral oil never has solved and never can solve the problem of constipation. It also shows why mineral oil leaks.

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As contrasted with cathartics, Petrolagar is non-habit forming, and once normal elimination has been restored may be given in diminishing quantity.

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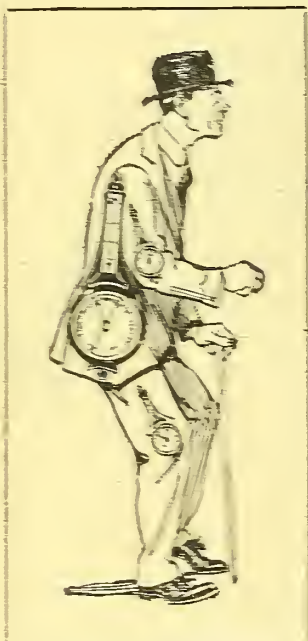
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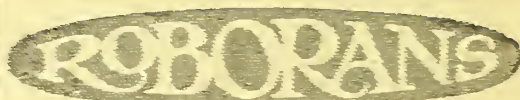
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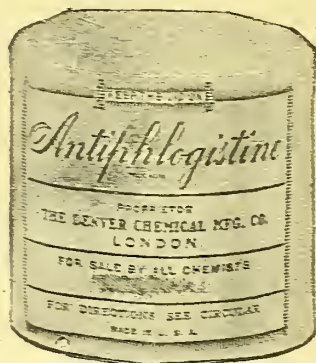
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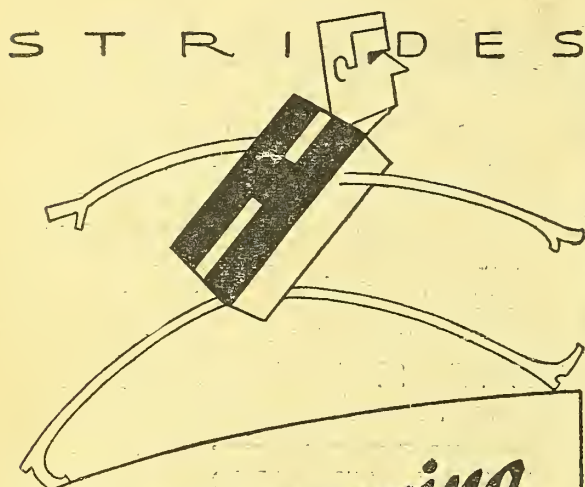
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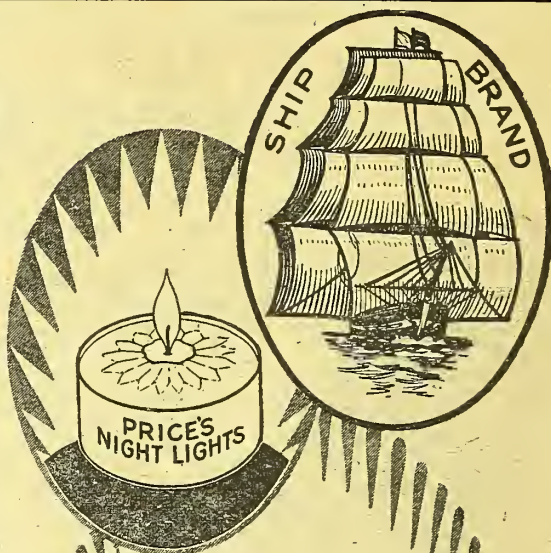
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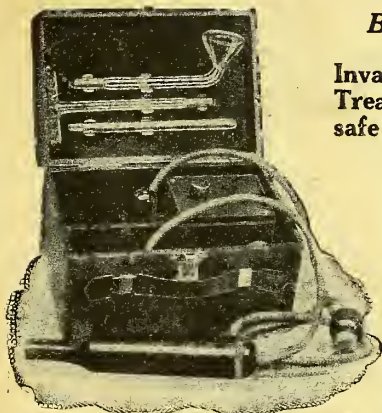
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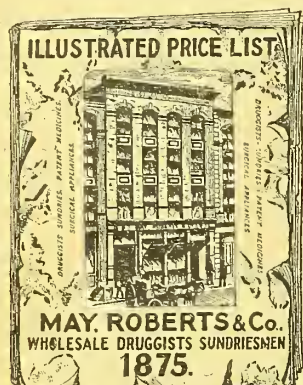
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42 CANNON ST.
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JUNE 26, 1926

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9.—NORTH OF ENGLAND (Manufacturing Town).—Attractive Pharmacy; no opposition; returns last year, £2,450; net profit about £500; double-fronted shop, well fitted and stocked; living accommodation; rent, £96; lease would be granted; price, £2,060; stock estimated at £1,450.

10.—CATHEDRAL CITY.—Ready-money Business; no side lines; returns, £30 weekly, which produce a net income above the average; rent moderate; small residence; held on lease; to effect a speedy transfer vendor will accept £800.

11.—INLAND HEALTH RESORT.—General Retail and Dispensing Business; returns, £1,500, with scope for increase; gross profit 35 per cent.; well-fitted, double-fronted shop; rent, £65, which includes residence; good lease; further details on application.

12.—DORSET (Coast Town).—Ready-money Business, situate in main road; returns, about £25 weekly; good opening for a qualified Chemist; corner shop, well fitted and stocked.

13.—EAST COAST (Market Town).—Very old-established Business; returns, £3,500; net profit over £600; the books are kept by accountants and certified; terms, valuation of stock and fixtures, and sum for goodwill to be agreed; vendor is retiring after having held the business for over 40 years.

14.—HOME COUNTY.—Old-established Business and Branch; combined turnover, £2,585 last year, increasing; the value of the stock and fixtures at both pharmacies is about £1,100; the rent in each case is £40; long lease; price, £1,700, or would sell separately; illness of vendor cause of sale.

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SOUTH OF ENGLAND (Busy Town).—Exceptional opportunity to acquire at a very low figure an old-established, profitable Retail, N.H.I. and Prescribing Business solely owing to owner's continued ill-health; double-fronted shop; now doing £800, has done over double; 20 years' lease at £36; good opening Optical; no Chemist doing same in locality; excellent position; nearest Chemist to new houses (approx. 300); stock, fixtures, etc., worth £450, but owner will accept reasonable offer for quick sale. "H. S.," 133/21, Office of this Paper.

YORKSHIRE, SOUTH (large town).—For immediate Sale, for sound reasons, growing Business situated on tram route; well stocked; nicely fitted; returns over £800, increasing; N.H.I. 100 weekly; living accommodation; great scope for increase, particularly in Photographic and Optics; price about £550 cash, or valuation terms considered. 133/18, Office of this Paper.

BEAUTIFUL and modern fitted Drug Store ready for converting into Chemist Business; main road, Manchester; super cinema being built; billiard and dance hall attached; grand opportunity for qualified Chemist; Kodak Agency; will Let or Sell; long lease; absolute bargain; cash buyer; thickly populated district. 6 Hardman Avenue, Sedgley Park, Prestwich, Manchester.

BUSINESS. pleasant suburban situation; quite unopposed; small living accommodation; long lease; at present under unqualified lady; great scope for increase; opening for Kodak, Optics, etc.; valuable Toilet Proprietaries; stock and fixtures at valuation, plus goodwill, about £1,000. 122/34, Office of this Paper.

CHEMIST Business; established 84 years; same hands; main road; N.W.; terribly neglected owing to illness; takings £10; living accommodation; low rent; splendid opening for Dentist; £500; stock and fixtures are worth price asked. 131/22, Office of this Paper.

CHEMIST, residential suburb Bristol; modern double-fronted shop, good dwelling-house; rent £45; goodwill, fixtures, £450; stock valuation; takings about £20 weekly. William E. Parker, Trade Valuer, 23 Nicholas Street, Bristol.

FOR Sale, old-established Business of a Dispensing Chemist carried on for many years in best business part of Hertford under the style of "George Lines & Co." Freehold of the premises can be acquired if desired, or lease. Apply Braund & Gram, Land Agents, etc., Hertford.

LIGHT General Retail in Midland city, returning £2,000; Kodak Agency; good house; vendor will sell freehold or grant lease; price for business, £1,000; references required. 85/845, Office of this Paper.

OLD-ESTABLISHED Drug Stores, about 15 miles from Baker Street; growing locality; Kodak agency; house and small garden; qualified man would do well; takings last three years average £800 yearly; price, £500. 133/30, Office of this Paper.

TWO good old-established Businesses offered for Sale on busy main roads in Manchester; corner positions; double-fronted; Kodak and Rexall Agencies; well fitted and stocked; excellent N.H.I.; profits above average; doing good trade; auditor's figures to prove; full particulars to genuine buyers; sound investments. 85/815, Office of this Paper.

£150 (OR NEAREST).—Fixtures, stock, best immediate offer (cash or instalments) accepted; owner just received appointment; wealthy, growing neighbourhood; little opposition; suit single man or Drug Store; gas, electric; shop, room, shed, 16s. weekly, rates included; small furnished house if desired; freehold of all above £750. James, Chemist, Four Oaks.

£200 DOWN, £275 Instalments.—Cash Chemist's, Derbyshire; no opposition; N.H.I. Dispensing commences July 1; chemist's population approximately 10,000; turnover increasing; will easily reach £30 weekly after strike; Kodak Agency; fine stock and fixtures, worth over £500; shop with store or bedroom above, 10s. weekly clear; landlord willing long lease same terms; good reasons disposal. 131/31, Office of this Paper.

BUSINESSES WANTED.

6s. for 50 words or less; 6d. for every additional 10 words or less, prepaid.

ADVERTISER wants a genuine mixed "Drug Store"; price must be reasonable, also the rent; unopposed if possible; country would not be objected to. c/o Mrs. Dickenson, 11 Booth Place, Leeds.

CHEMIST, Branch Manager for many years, desires to purchase a Retail Business; about £800 cash available; if any further amount should be required same to be dealt with by mutual arrangement; please give details; replies treated confidentially. 132/19, Office of this Paper.

REQUIRED, a really sound modern Business; ingoing about £3,000; must bear strict investigation. Apply "H. P.," 86/849, Office of this Paper.

SOUND Business wanted, with living accommodation; London suburbs; good-class Retail and Dispensing; capital about £1,500. Please give full particulars, in confidence; cash transaction for immediate possession. Apply 132/34, Office of this Paper.

PARTNERSHIP.

VACANCY occurs for Partner in an old-established high-class Dispensing Business on the South Coast; £1,500 required; strict confidence will be observed. 131/36, Office of this Paper.

FOR SALE.

LEITZ Microscope Stand, 3 eyepieces, Zeiss A.D. and 4 o.i. objectives, substage condenser, £15. Barbour, Douglas, I.O.M.

MASSEELEY Show Card Printing Machine, complete with three sets of type, guillotine, cards, etc., £16; type alone worth the money; seen any evening. "Trentham," Beckford Road, Croydon.

WHAT OFFERS?—Shop Rounds (labelled), Dispensing Scales (stamped), 2-lb. Counter Scales, Window Fittings with some glass shelves, Manicure Sets (new), some Drugs in original packages; postcard will bring full list. Drug Stores, 41 Winstanley Road, Battersea, S.W.11.

£90 NATIONAL Cash Register (twin), £45 cash; perfect order; registers £2; separate cash drawers and totalisers; suit two departments. Gimbrett Co., Southport.

APPRENTICESHIP.

APPRENTICESHIP.—Corfe & Son, Ltd., Chemists, Maidstone, have now vacancies for two Apprentices; a splendid opportunity for learning all branches of a thriving businesslike Pharmacy; four qualified chemists on staff. Apply to A. F. Corfe, Managing Director.

APPRENTICESHIP.—An excellent opportunity occurs in a high-class Dispensing Chemists and Ophthalmic Opticians for a youth to learn all branches of the business. Marsden's Stores, Ltd., Chemists and Opticians, 79 Tottenham Court Road, W.1.

AGENCIES.

INDIA.—Representative of few selected and well-known firms is shortly returning to India, and is open for an additional Agency; all important centres visited every year; samples carried if desired; established connection. Write 121/24, Office of this Paper.

AGENTS wanted, calling on Wholesale and Retail Chemists, to sell on commission basis high-class line in Rubber Sponges for French manufacturers; very competitive prices; large possibilities for man having first-class connections and at present carrying non-competitive lines. Write, in confidence, to "M. G.," 134/1, Office of this Paper.

CHEMIST, with business and office in centre of city (Dublin) wishes Agencies for any good lines. Apply 86/846, Office of this Paper.

CHEMIST, with own motor, will have representative (proved Salesman) covering Scotland, Dundee to Inverness. Applications desired from Manufacturers, etc., for good Agencies; terms, commission and part-expenses. 132/7, Office of this Paper.

ESSENTIAL Oil Firm require Agents calling on Soap and Perfumery Makers, Druggists, Wholesale Chemists, etc., provincial areas, on commission; state ground. 86/848, Office of this Paper.

IF you are a Salesman and can sell C.O.D. send me your pedigree for a 20% 2d. line which will be ultimately advertised. 85/843, Office of this Paper.

SURGICAL Dressings, Sanitary Towels.—Representative wanted by Southall Bros. & Barclay, Ltd., for Eastern States of Canada. Applications to Charford Mills, Birmingham.

TOOTH BRUSHES AND PERFUME SPRAYS.—Representatives, not already carrying similar lines and who have an established connection with middle-class and industrial Chemists' businesses, required to sell on commission; areas reserved; prices keenly competitive and attractive range of patterns; state territory covered and journey periods. 122/59, Office of this Paper.

PREMISES TO LET.

CRICKLEWOOD.—Good position, suitable for smart Chemist; lock-up shop, with parlour and scullery; 10 years' lease; £225; rent £75 per annum (inclusive). Apply A. Beckett, 12 Cricklewood Lane, N.W.2.

FORMULÆ.

A REAL BUSINESS OPPORTUNITY.
A TECHNICAL Expert in the Manufacture of all Pharmaceutical and Toilet Preparations and Chief Chemist to the largest manufacturing concern in this country offers sound Working Formulæ (with detailed procedure) giving products of highest merit. One formula may make you hundreds of pounds and carries my personal guarantee. Each embodies a life's manufacturing experience. Submit your problem at once. Correspondence invited from the Wholesale and Retail trade.
"F.C.S., M.P.S.," 132/12, Office of this Paper.

SITUATIONS OPEN.

RETAIL.

[HOME.]

The ADVERTISER may if preferred have replies addressed to this Office, and forwarded on payment of an additional charge of 1/-.

ALTRINCHAM.—Assistant Junior, or otherwise (also Apprentice), for busy Dispensing and Photographic business; good Counter man, accurate Dispenser, and possess good general knowledge of the trade. Full particulars and references to G. G. Unsworth, 111 George Street, Altrincham.

BIRKENHEAD.—Wanted, qualified male Assistant, age about 25, for high-class Dispensing business. Apply, with full particulars, including salary required, to W. S. Robinson, 8 York Place, Oxtou, Birkenhead.

BIRMINGHAM.—Branch Manager (aged 30-35), qualified, required for working-class district; must be good Stock-keeper and Window-dresser, accurate Dispenser, good Counter-man; permanency. Apply, stating experience, salary required, etc., to Prosser's, Ltd., 59 Spring Hill.

BIRMINGHAM.—Junior Assistant wanted shortly (male or female); must be used to quick cash trade, N.H.I. Dispensing and Photography. Please give full particulars as to age, height, salary, references, and enclose photo (if possible) to C. Vernon Thompson, Rexall Chemist, Sparkbrook, Birmingham.

BIRMINGHAM (near).—Small business; no Sunday duty; energetic Assistant, able to control; qualified or unqualified; N.H.I. Dispensing; must be thoroughly up-to-date with Counter; lady or gentleman; house available if required. Experience and terms to 133/31, Office of this Paper.

BRADFORD.—Qualified Assistant, smart, energetic Salesman with good knowledge of Photographic Sales wanted; good-class business; salary to commence £4 weekly. State age, references, etc., to 133/20, Office of this Paper.

BRISTOL.—Qualified Manager wanted for Retail Pharmacy, Photographic and N.H.I.; good Salesman and Window-dresser. Please state experience, age, salary, etc., with recent photo (if convenient), to C. A. Stokes, M.P.S., Chemist, 34 Lower Castle Street, Bristol.

CITY Business.—Qualified Male Assistant; Retail and Dispensing. Apply, with usual particulars, to 85/844, Office of this Paper.

CROYDON.—Assistant required, aged 25-30; qualified or unqualified, with good, quick Counter experience and knowledge of Photographic trade. Apply, with full particulars, in first letter, giving references, age, height and salary required, 132/22, Office of this Paper.

DERBYSHIRE.—Qualified to manage recently acquired village Pharmacy; low salary; good share net profits; excellent chance conscientious, sober Pharmacist; permanency if suitable; either sex. Give full particulars, age, experience, salary and percentage net profits required. 131/510, Office of this Paper.

EAST COAST.—Immediately, until September 18, Junior Assistant, chiefly for developing; practical Photographic experience essential. Martin, Chemist, Clacton-on-Sea.

HEATHFIELD.—Lady or gent. (Hall qualification) for Counter work, Dispensing, Book-keeping, and to pack stock. Apply, with full particulars and state salary required (outdoors), to E. Crisp, Station Road, Heathfield, Sussex.

LIVERPOOL.—Manager; qualified; industrial neighbourhood; quick and accurate Dispenser. State salary and give references. Apply "Rhei," 85/842, Office of this Paper.

LONDON.—Young qualified Locum required for period of 10 weeks from July 4. Particulars of experience and salary required, Briggs, Chemists, 126 Hoe Street, Walthamstow.

LONDON.—Unqualified Assistant (male), with good Dispensing experience, for good-class business; three assistants kept; must have undeniable references. Apply, with full particulars as to age, salary, etc., to R. M. Graham, 10 Station Parade, Willesden Green, N.W.2.

LONDON.—Unqualified Junior Assistant required; Counter and N.H.I. dispensing. Particulars of experience, height and salary required, 133/5, Office of this Paper.

LONDON (Near).—Qualified Assistant, with good references. Full particulars age, salary, scope of experience, when disengaged, and photo to T. England, "Lashams," 1 High Street, Romford. Phone 505.

LONDON, E.—Young qualified man for limited company, run by unqualified man (also young), who will qualify in due course; to a worker who will enthusiastically identify himself with the business a comfortable and progressive berth is assured; applicant should be quick Dispenser (N.H.I.) and keen on Photographics. Write Thompson, 140 Kingsland Road, E.2.

LONDON, N.—Competent Assistant (qualified or unqualified) required for Family business; capable of taking charge. Apply by letter in first instance, stating full particulars of experience, salary required, etc., to G. Daniel, 272 High Road, Wood Green.

LONDON, N.—Qualified Manager; Dispensing, Counter and Photographic. Full particulars, when disengaged, salary required. 133/27, Office of this Paper.

LONDON, W.5.—Qualified Assistant required about July 12; must be a good all-round, up-to-date man and capable of taking charge; age about 30. Also a young Unqualified Lady Assistant as Dispenser; moderate hours. Apply in each instance to 133/6, Office of this Paper.

PLYMOUTH.—Qualified Manager required immediately for branch; energetic and good Salesman; excellent prospects for smart man; state salary and give references. Cook, 14 Beaumont Road, Plymouth.

YORKSHIRE.—Will any qualified single gentleman of personality and character co-operate with executors in building up a neglected business to its former status? Pleasantly situated in University City; commencing terms would be moderate, but any increase would be shared; to the right man splendid prospects of partnership or ownership would be assured; photographs, etc., promptly returned. 132/24, Office of this Paper.

ASSISTANT, July to mid-September; must be accustomed to a brisk good-class Retail and Dispensing, with Photographics. Kindly state full details of previous experience, age, height, salary required, and when disengaged. D. T. Evans, Ltd., Chemists and Opticians, Margate.

ASSISTANT, not over 30; must have had experience in Dispensing, Window-dressing and Photography; good Counter-man essential. Full particulars to 85/841, Office of this Paper.

CAPABLE qualified Assistants who are anxious to progress and obtain managerial appointments should communicate with 85/839, Office of this Paper.

IMPROVER or Junior wanted for high-class Dispensing business; a knowledge of Photographic work essential. State experience, salary (indoors), etc. Williams & Smith, 21 West Street, Horsham.

JUNIOR Assistant or Improver, male, required for summer season; must be an energetic and obliging Salesman; one with a knowledge of Photography preferred, but not essential. Apply, giving full particulars, age, salary, etc., to Harold Jackson, Chemist, The Imperial Pharmacy, Blackpool.

JUNIOR or Improver wanted at once; must be good and obliging Counterman and Window-dresser. State age, height, salary required, when disengaged and recent references, and photo (if possible) to Henry Tinker, 238 Bolton Road, Irlams O'th Height, Manchester.

JUNIOR Assistant wanted, male, unqualified, for good-class general Retail and Dispensing business, with Photography; outdoor; no Sunday duty. Apply, stating age, salary, and usual particulars, to C. H. Derbyshire, Chemist, Malvern Link, Worcs.

JUNIOR Assistant, about 20 years of age; must have had experience in Dispensing, Counter work, Window-dressing and Photography; preference given to one who has passed the Preliminary Exam. Full particulars to 85/840, Office of this Paper.

LADY Assistant, Minor qualification, for new good-class business, London suburb, Essex; permanency. Kindly give full particulars first letter, salary required (outdoors), and photo if possible; comfortable living accommodation available near to shop. Bayley, Chemist, Dagenham.

LOCUM, Qualified, required, August 9 to September 4 inclusive. Apply, giving full particulars, terms and references, to the Secretary, The Hartlepoons Co-operative Society, Ltd., Stockton Street, West Hartlepool.

LOCUM (lady), with Minor qualification, from August 15 to 28 (inclusive); to live out; state terms, references, etc. J. T. Egginton, Chemist, Bull Ring, Sedgley, near Dudley.

LOCUM required, July 23-August 5 approximately. Kindly state particulars re references, experience, and salary required. Maurice Jones, M.P.S., 204 Church Road, Willesden.

LOCUM, qualified, required for first or second fortnight in August next. Apply, stating terms and references, to L. T. Cooke, Chemist, 70 Northgate Street, Gloucester.

LOCUM, qualified, required from August 24 to September 6 inclusive. Apply, with usual particulars, to Page's Drug Stores, Ltd., 203 Hertford Road, Lower Edmonton, N.9.

LOCUMS wanted, male and female. Ayrton, Saunders & Co., Ltd., 34 Hanover Street, Liverpool.

LOCUM, qualified, wanted; easy post; July 9 or 11 to 25. Terms to Oswald Hall, Chemist, Coventry.

MALE Invoicing Clerk able to type and use Elliott-Fisher invoicing machine; accustomed to surgical terms. Apply to "M. S. A.," 167 Gray's Inn Road, W.C.1.

MESSRS. COOPER, SON & CO., LTD., have a vacancy for a qualified gentleman with good Dispensing and Counter experience. Reply by letter only, giving copies of recent references, stating age and salary required, to "A. J. B. C.," 80 Gloucester Road, South Kensington, S.W.

NORTH WALES COAST.—Immediately, Assistant wanted for season or permanency. Apply, particulars, age, experience, salary, etc., to Williams, Medical Hall, Holyhead.

PHOTOGRAPHIC WORK.—Assistant, male, required at once until middle of September; good practical knowledge of developing and printing essential. State experience, age, and salary required (outdoors). Hoare, Chemist, Cromer.

PRINCESS ALICE HOSPITAL, EASTBOURNE.—Required, lady Locum Dispenser (Hall), August 11 to September 11. Apply Secretary.

QUALIFIED lady required for Dispensing and Counter country town, 24 miles from London; state particulars of age, salary and experience. Richards and Bowring, Ltd., The Pharmacy, Wickford, Essex.

QUALIFIED Manager required for branch shop; snitabile berth for man recently passed; must be accurate Dispenser and good Window-dresser, with knowledge of Photography. Apply, with references, to Newington's Pharmacies, Portland Road, South Norwood.

QUALIFIED Assistant, lady or gentleman, wanted at once for a good-class Dispensing and Photographic business; must be a good Salesman and Window-dresser. Apply, giving full particulars re experience, age, and salary required, to Knowles Fletcher, 22 Woolwich Road, Belvedere, Kent.

QUALIFIED Assistant required; Window-dressing and knowledge of Photography. State age, experience and salary by letter to 187 Worpole Road, Wimbledon, S.W.20.

QUALIFIED Assistant wanted immediately (if possible); tall; good Salesman and Stock-keeper, with London experience; age about 25-30; references required. Give fullest particulars in first letter, salary required, etc. "Chemicus," 94 Queen's Road, Bayswater, W.2.

QUALIFIED Manager, single, for light Retail and Dispensing Business; permanency if satisfactory; good opening for young man anxious to make progress. 132/33, Office of this Paper.

QUALIFIED lady or gentleman, London, E., chiefly for N.H.I. Dispensing; also qualified for Cover. Please give full particulars and salary required to 133/39, Office of this Paper.

RELIABLE Junior Assistant wanted shortly; Photography and Window-dressing essential. Apply Manager, Holt Green & Co., Edgware Tube Station, Edgware, N.W.

REQUIRED in 5 weeks' time, two Assistants, male and female (the latter must be experienced in Window-dressing). Full particulars, height, salary expected, age, photograph, etc., to A. & N. Catto, Ltd., Chemists, Ilford.

REQUIRED very soon Senior Assistant, with some management duties, for best-class business; qualified preferred, but not essential. Gentleman seeking a permanency should apply to Oliver & Crick, 70 Bank Street, Maidstone.

SMART Junior Assistant for July 1; quick Counter, Dispensing and general Retail experience; short hours; no holiday or Sunday duty; small country market town. Full particulars, age, height, references, salary (outdoors), with photo. Phillips, F.S.M.C., Chemist and Sight-testing Optician, Axminster, Devon.

UNQUALIFIED Manager for small Drug Store; suit middle-aged person; must be good Prescriber, strictly honest and trustworthy; poor class district in London; small salary and commission. Apply 132/20, Office of this Paper.

MANAGERSHIP.

WANTED, a qualified Chemist and Optician; age about 35; a live man will have a splendid opportunity; first-class business in main London thoroughfare; can live on the premises. P.C.B. 23/16, Office of this Paper.

WANTED, at once, qualified Manager for branch shop at Stainland, near Halifax. Apply to S. T. Shaw, Chemist, Golcar, near Huddersfield.

WANTED at once, Qualified as Cover; permanency. Call or write, stating full particulars, age and salary required. Berry, 76 Carnarvon Road, Stratford, E.15. (Private address.)

YOUNG ladies required with good experience in Retail Pharmacy for clerical work in London; interview necessary. Give full particulars, experience, and salary required. Reply 131/30, Office of this Paper.

WHOLESALE.

A FIRM of Manufacturing Chemists, specialising in all Disinfectants and Antiseptics, is desirous of exploiting same with Agents or Travellers on a commission basis. Applications, in strict confidence, to 131/18, Office of this Paper.

MANUFACTURERS of high-class, quick-selling Toilet Preparations invite applications from thoroughly competent Salesmen in different parts of England, Ireland, Scotland and Wales; men with high standard and with good connections are essential. Apply 129/22, Office of this Paper.

PERFUMERY (high-class, well established, French).—London Representative with connection and experience wanted; salary, expenses and commission. State particulars, previous engagements to P.C.B. 22/38, Office of this Paper.

REPRESENTATIVES calling on Chemists required to carry as side-line well-advertised Proprietary on liberal commission basis. Write, stating ground covered, Bash & Co., Ltd., 121 Charterhouse Street, London, E.C.1.

REPRESENTATIVES wanted by established house issuing high-class Proprietary Perfumery Series, to cover the following territories: (1) Lancs. and Cheshire, (2) West of England. Applicants must be men of high standing and established connection, making regular journeys, and calling upon all Chemists, Hairdressers and Stores; generous commission and exclusive territory. Write full particulars (in confidence) to 86/847, Office of this Paper.

REQUIRED, Traveller calling on London and provincial Wholesalers and Factors, to sell as side-line well-known Flycatchers, "Aeraxon," with pin; liberal commission. Apply, letter, A. M. H. Friedel, 4 Broad Street Buildings, E.C.2.

[COLONIAL, INDIAN AND FOREIGN.]

CHINA.—Qualified Assistant, about 25, in old-established English Chemists in Shanghai; high-class Dispensing and Store experience essential; salary 300 dollars (Mex) per month, with annual increases; free second class passage; 4 years' agreement. Full particulars as to experience, etc., by letter, to Dakin Brothers, Limited, 82 Middlesex Street, E.1.

JUNIOR Assistant (qualified) required for Malay States; single; age about 25; salary \$300 (£35) per mensem for first year, \$325 (£37 18s. 4d.) for second year, \$350 (£40 16s. 8d.) for third year, with second-class passage out and home; excellent prospects for right man; living costs in club chambers approximately \$145 (£16 18s. 4d.) per mensem, board and lodging. Apply by letter only to Dakin Bros., Ltd., 82 Middlesex Street, London, E.1, with copies of references.

SITUATIONS WANTED.

RETAIL.

[HOME.]

A.—QUALIFIED, 23, desires position with prospects; good Dispensing and Counter experience; Photography. Denby, Hereford Terrace, Leominster.

A CAPABLE Assistant, 40; unqualified; smart Counterman, accurate Dispenser, Photography, Window-dressing. "Aitch," 53 Cantelupe Road, East Grinstead.

A RELIABLE and experienced Chemist as Manager; excellent experience; good business man; good appearance and address; single; best of references. "Fides," 133/19, Office of this Paper.

A DVERTISER, 24, desires post as Improver to gain good Dispensing knowledge; Bristol or near; small salary; interview. 132/32, Office of this Paper.

A PPRENTICESHIP wanted with good-class progressive Chemist by young gentleman (19); good appearance, tall, matriculated, 12 months' banking experience; wages expected and opportunity for study; West of England preferred. "Rex," 131/28, Office of this Paper.

A S Dispenser to Doctor or Assistant to Firm; many years' experience in both; unqualified, middle-aged, active and reliable; highest references; just disposed of own business; temporary or permanent; disengaged. 131/20, Office of this Paper.

A S Manager, M.P.S., thoroughly experienced; elderly; best of references; country preferred; disengaged July 17. "Chemist," 4 Mafeking Place, Chapeltown, near Sheffield.

A SSISTANT (21, male) requires temporary position; disengaged June 28; reliable. "Aspirin," 41 King Edward Road, E.9.

A SSISTANT, unqualified, 26, excellent experience Dispensing, Counter, Window-dressing and Photographic, desires permanency near Wimbledon; salary 60s. "Phenalgine," 86 Effra Road, Wimbledon, S.W.19.

A SSISTANT, unqualified; good all-round experience, Counter, Dispensing, Photography, Belt and Truss work. Drew, 9 Norfolk Road, Southampton.

A SSISTANT or Manager; qualified; first-class experience; London or suburbs; outdoors; now disengaged. 133/16, Office of this Paper.

C APABLE, experienced Assistant; reliable and trustworthy; can take charge, or Manager, Drug Stores. 133/14, Office of this Paper.

C HEMIST, qualified (Scot), age 24, height 5 ft. 10 in., desires post; managerial preferred, but not essential; good references; disengaged July 24. Apply 133/29, Office of this Paper.

D ISENGAGED July 5; Pharmacist (male); experienced; Locum or permanency. "Pharmacist," 67 Western Road, Ealing, W.

D ISENGAGED 26th inst., qualified, experienced Locum. "M.P.S.," 27 Blackstock Road, Finsbury Park, N.4.

D ISPENSER (Hall).—Experienced, qualified lady seeks post, preferably in London. Miss Flint, 38 Woodland Gardens, Muswell Hill, N.10.

D OCTOR'S Dispenser; qualified; at liberty; male. Address "Medicus," 28 Amos Hill, Penygraig.

E LDERLY qualified Chemist; any capacity; disengaged; moderate salary; town and country experience. "R.," 29 Ashley Hill, Bristol.

H OSPITAL Dispenser; locum; qualified. Thomas Irving, 66 Rowfant Road, Balham.

J UNIOR (21), good experience of Dispensing, Counter, Window-dressing and Photography, seeks post. 131/33, Office of this Paper.

J UNIOR, 19; good Dispensing and Photographic experience. E. Harrodine, 31 Leamington Street, Roshdale.

L ADY, 25, unqualified, requires situation, London; 10 years' same post; high-class Counter experience, City and West-End; Perfumery and Drugs; excellent references; disengaged July 3. Reply P.C.B. 22/19, Office of this Paper.

L ADY; tall; 19; 4 years' experience, Counter and Stock; no Dispensing; temporary or permanent; W. or S.W. district. Page, 24 East Hill, Wandsworth.

L ADY, young, 5 ft. 6 in.; unqualified; 4 years' good Counter and Dispensing experience; disengaged any time; Derbyshire or Nottinghamshire preferred. "M.," c/o G. Midgley, Esq., Lime Avenue, Ripley, Derbyshire.

L ADY Dispenser-Book-keeper desires post with Doctors; experienced in Dispensing, Nursing, Accounts and general Secretarial work; Locum or permanency; excellent testimonials. "Tragacanth," c/o 80 High Street, Highgate, N.

L ANCASHIRE or Cheshire; 26; married; passed Part I; energetic; excellent training; West-End experience; undeniable references; disengaged. Hughes, 20 High Street, Menai Bridge, Anglesey.

L IVERPOOL OR DISTRICT.—Young lady requires post, Dispensing and Counter; free July 1. "S.," 15 Mulgrave Street, Liverpool.

LOCUM; qualified; Hull and district. 125/36, Office of this Paper.

LOCUM, experienced; abstainer; take entire charge; booking dates vacant July 19-31, August 16-28, September 20 onward; knowledge Photography; terms moderate. "Pharmacist," c/o Evans Sons Lescher & Wehh, Ltd., Chemists, Liverpool.

LOCUM or Manager, Qualified, 39, disengaged July 19; 7 years last berth; exceptional experience; good references. Smith, Chemist, Coleford.

LOCUM, Leeds and district; Qualified (24); July 1-August 7. L. Carr, 41 Beckett Street, Leeds.

LOCUM; qualified; middle-aged; 20 years own business; present post 12 months; excellent references; reliable; temperate; all-round experience; disengaged July 19; booking to end September. Roberts, 11 Barclay Street, Leicester.

LOCUM, permanency, Dispenser, Hall, experienced, desires post, Doctor or Institution; seaside, South or West, preferred. Norton, Cricket, Ilminster.

LOCUM; thoroughly capable, with excellent references; disengaged July 10; unqualified. "A. B.," 131 Mount View Road, N.4.

LOCUM, 47; thoroughly competent; reliable; all-round, town and country experience; open dates, June 26 to July 30; terms moderate; well recommended. "Chemists," 239 Camherwell New Road, S.E.5.

LOCUM; unqualified; Connter, Dispensing, Photography, etc.; developing and printing a speciality; 15-years own business; good references. Apply "Locum," 272 Merton Road, Wandsworth, S.W.18.

LOCUM; qualified; middle-age; thoroughly competent Dispenser and Connterman; London or near; disengaged now. "Locum," c/o Thorntons, 4 Stratford Road, Kensington, W.

LOCUM, qualified, tall (29), requires engagements June 28-July 10, July 26-August 14, and all September. F. R. Smith, 34 Welbeck Avenue, Southampton.

LOCUM; reliable; entire charge; abstainer; vacant July 18-31, August 15-28, onward; terms reasonable. "Pharmacist," c/o Phillips, Craven Arms, Salop.

LONDON DISTRICT.—Ph.C. desires position, Assistant or Manager, view to early succession; sound references; turnover about £2,000. 130/23, Office of this Paper.

MANAGER, 31, Major, F.S.M.C., desires change, Manager, Partner or Assistant; London or subnrh; speciality, Salesmanship, Sight Testing (sound practical experience), Photography and Window-dressing; energetic and progressive; competent; accustomed to responsibility; highest references. 127/8, Office of this Paper.

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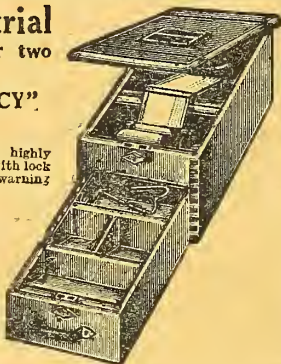
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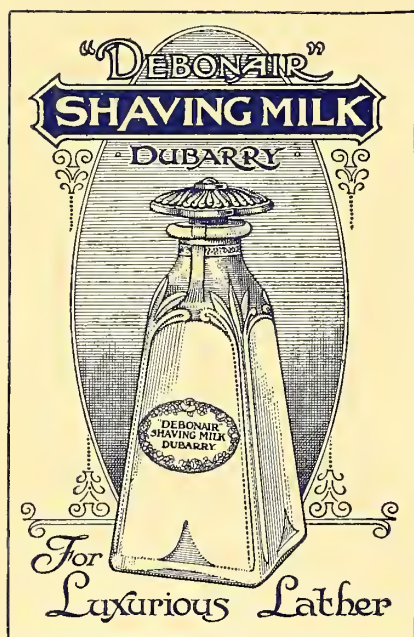
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